# TONE GENERATOR

# MU100R

## SERVICE MANUAL

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PARTS LIST



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## IMPORTANT NOTICE

This manual has been provided for the use of authorized Yamaha Retailers and their service personnel. It has been assumed that basic service procedures inherent to the industry, and more specifically Yamaha Products, are already known and understood by the users, and have therefore not been restated.

**WARNING:** Failure to follow appropriate service and safety procedures when servicing this product may result in personal injury, destruction of expensive components and failure of the product to perform as specified. For these reasons, we advise all Yamaha product owners that all service required should be performed by an authorized Yamaha Retailer or the appointed service representative.

**IMPORTANT:** This presentation or sale of this manual to any individual or firm does not constitute authorization, certification, recognition of any applicable technical capabilities, or establish a principal-agent relationship of any form.

The data provided is belived to be accurate and applicable to the unit(s) indicated on the cover. The research engineering, and service departments of Yamaha are continually striving to improve Yamaha products. Modifications are, therefore, inevitable and changes in specification are subject to change without notice or obligation to retrofit. Should any discrepancy appear to exist, please contact the distributor's Service Division.

**WARNING:** Static discharges can destroy expensive components. Discharge any static electricity you body may have accumulated by grounding yourself to the ground buss in the unit (heavy gauge black wires connect to this buss.)

**IMPORTANT:** Turn the unit OFF during disassembly and parts replacement. Recheck all work before you apply power to the unit.

## LITHIUM BATTERY HANDLING

This product uses a lithium battery for memory back-up.

**WARNING:** Lithium batteries are dangerous because they can be exploded by improper handling. Observe the following precautions when handling or replacing lithium batteries.

- Leave lithium battery replacement to qualified service personnel.
- Always replace with batteries of the same type.
- When installing on the PC board by soldering, solder using the connection terminals provided on the battery cells. Never solder directly to the cells. Perform the soldering as quickly as possible.
- Never reverse the battery polarities when installing.
- Do not short the batteries.
- Do not attempt to recharge these batteries.
- Do not disassemble the batteries.
- Never heat batteries or throw them into fire.

### ADVARSEL!

Lithiumbatteri-Eksplosionsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandøren.

### VARNING

Explosionsfara vid felaktigt batteribyte.
Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren.
Kassera använt batteri enligt fabrikantens instruktion.

### VAROITUS

Paristo voi räjähtää, jos se on virheellisesti asennettu.
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin.
Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

The following information complies with Dutch Official Gazette 1995. 45; ESSENTIALS OF ORDER ON THE COLLECTION OF BATTERIES.

- Please refer to the diassembly procedure for the removal of Back-up Battery.
- Leest u voor het verwijderen van de backup batterij deze beschrijving.

## WARNING: CHEMICAL CONTENT NOTICE!

The solder used in the production of this product contains LEAD. In addition, other electrical/electronic and/or plastic (where applicable) components may also contain traces of chemicals found by the California Health and Welfare Agency (and possibly other entities) to cause cancer and/or birth defects or other reproductive harm.

DO NOT PLACE SOLDER, ELECTRICAL/ELECTRONIC OR PLASTIC COMPONENTS IN YOUR MOUTH FOR ANY REASON WHAT SO EVER!

Avoid prolonged, unprotected contact between solder and your skin! When soldering, do not inhale solder fumes or expose eyes to solder/flux vapor!

If you come in contact with solder or components located inside the enclosure of this product, wash your hands before handling food.

## ■ WARNING

Components having special characteristics are marked ⚠ and must be replaced with parts having specification equal to those originally installed.

⚠印の商品は、安全を維持するために重要な部品です。交換する場合は、安全のため必ず指定の部品をご使用下さい。

**Tone Generation Method**

AWM2 (Advanced Wave Memory 2), Virtual Acoustic Synthesis System (VL)

**Maximum Simultaneous Polyphony**

64-note + 1-note (VL)

**Sound Module Modes**

XG (Extended General MIDI), TG300B, C/M, and Performance

**Multi-timbral Capacity**

32-Part (on 32 MIDI channels; with element reserve priority for later notes and dynamic Voice allocation)

**Internal Voice/Program Structure**

**Normal Programs**

| | |
|---|---|
| Total Voices | 1267 + 256 (VL) |
| XG mode | 1074 + 256 (VL) |
| TG300B mode | 614 |
| C/M mode | 128 (Parts 1 — 9), 64 (Parts 11 — 16) |

**Drum Programs**

| | |
|---|---|
| Total Programs | 46 |
| XG mode | 36 |
| TG300B mode | 10 |
| C/M mode | 1 |

**Performance Programs**

Up to four Voices plus all effect settings can be memorized to a Performance.

| | |
|---|---|
| Preset Programs | 100 |
| User Programs | 100 |

**Effects**

Six sections of multi-effects: Reverb (12 Types), Chorus (14 Types), Variation (70 Types), Insertion 1, 2 (43 Types), Harmony (4 Types), Effect and EQ (4 Types)

**Display**

Custom back-lit LCD

**Controls**

VOLUME control; A/D INPUT level control; Mode select buttons: PLAY, UTIL (UTILITY), MODE, EDIT, EFFECT, EQ; other buttons: MUTE/SOLO, ENTER, EXIT, PART ⊖/⊕, SELECT ◀/▶, VALUE ⊖/⊕; data dial; POWER button

**Jacks and Terminals**

Front panel: PHONES jack (1/4"), A/D INPUT 1, 2 jacks (1/4"),
Rear panel: INDIVIDUAL OUTPUT 1, 2 jacks; OUTPUT R, L/MONO jacks (Right, Left/Mono); DC IN jack; TO HOST terminal; HOST SELECT switch; MIDI IN A/B, MIDI OUT, and MIDI THRU terminals

**Computer/MIDI Interface**

Direct connection to host computer port (RS-232C, RS-422) with optional cables (CCJ-PC1, CCJ-PC1, CCJ-MAC); MIDI terminals allow connection to MIDI sequencer or MIDI controller

**Data Transfer (Baud) Rate**

MIDI — 31,250 bps (bits per second)
Mac — 31,250 bps
PC-1 — 31,250 bps
PC-2 — 38,400 bps

**Power Supply**

Yamaha PA-5B AC Adaptor (included)

**Dimensions (W × D × H)**

483 × 229 × 44 mm (19" × 9" × 1-3/4")

**Weight**

2.4 kg (5 lbs., 5 oz.)

**Included Accessories**

Owner's Manual, Yamaha PA-5B AC Adaptor
Floppy Disk

**Output Level**

Refer to the TEST PROGRAM section of this manual.

# ■ 総合仕様

### 1. 機能

| | |
|---|---|
| 音源 | AWM2音源 |
| 最大同時発音数 | 64音 |
| サウンドモジュールモード | XG, TG300B(GM-B), C/M, Performance |
| 発音方式 | 32チャンネル・マルチティンバー<br>エレメントリザーブ付後着優先、DVA |
| エフェクター | 6基搭載<br>リバーブ、コーラス、バリエーション、インサーション1, 2、イコライザー |
| インターフェース機能 | ケーブル(CCJ-PC1, CCJ-PC2, CCJ-MAC, CCJ-PC1NF)にてRS-232C、RS-422ポートと直接接続可能<br>MIDIシーケンサー、MIDIキーボードに接続可能 |

### 2. 内部構成

| | | | |
|---|---|---|---|
| 音色数 | ノーマル音色 | トータル | 1267 |
| | | XG | 1074 |
| | | TG300B | 614 |
| | | C/M | 128(Tr.1～9), 64(Tr.11～16) |
| | ドラム音色 | トータル | 46 |
| | | XG | 36 |
| | | TG300B | 10 |
| | | C/M | 1 |
| | パフォーマンス | 4レイヤーまで可能、エフェクトもメモリー | |
| | プリセット | | 100 |
| | インターナル | | 100 |
| エフェクター種類 | リバーブ | | 12 |
| | コーラス | | 14 |
| | バリエーション | | 70 |
| | インサーション1, 2 | | 各43 |
| | イコライザー | | 4 |

### 3. ディスプレイ

| | |
|---|---|
| LCD | カスタムLCD(バックライト付) |
| LED | 6個(スイッチに内蔵) |

### 4. 操作子

| | | |
|---|---|---|
| [PLAY] | [UTIL] | [MODE] |
| [EDIT] | [EFFECT] | [EQ] |
| [MUTE/SOLO] | [ENTER] | [EXIT] |
| [PART+] | [PART-] | |
| [SELECT+] | [SELECT-] | |
| [VALUE+] | [VALUE-] | |

HOST SELECT(リアパネル)
POWERスイッチ(電源スイッチ)
VOLUMEつまみ(マスターボリューム)
A/D INPUT VOLUMEつまみ(インプットボリューム)
ダイアル

### 5. 接続端子

| | |
|---|---|
| TO HOST(MINI DIN) | |
| MIDI IN-A | |
| MIDI IN-B | |
| MIDI OUT | |
| MIDI THRU | |
| PHONES(ステレオ標準ジャック) | |
| INPUT L, R | |
| INDIV. OUTPUT 1, 2(モノラル標準ジャック) | |
| OUTPUT L, R(ステレオ標準ジャック) | 定格出力： +5db(10kΩ負荷時)出力インピーダンス1kΩ |
| A/D INPUT(モノラル標準ジャック) | 定格入力： (Mic)-36db 入力インピーダンス33kΩ [Mic]<br>(Line)-11.5db 入力インピーダンス33kΩ [Line] |
| DC IN | |
| XGプラグインコネクタ(内蔵) | (2基) |

### 6. 電源

ACアダプター(PA-5B)

### 7. 外形寸法

483(W)×229(D)×44(H)[mm]

### 8. 重量

2.4Kg

### 9. 付属品

取扱説明書セット
ACアダプター(PA-5B)
CD-ROM

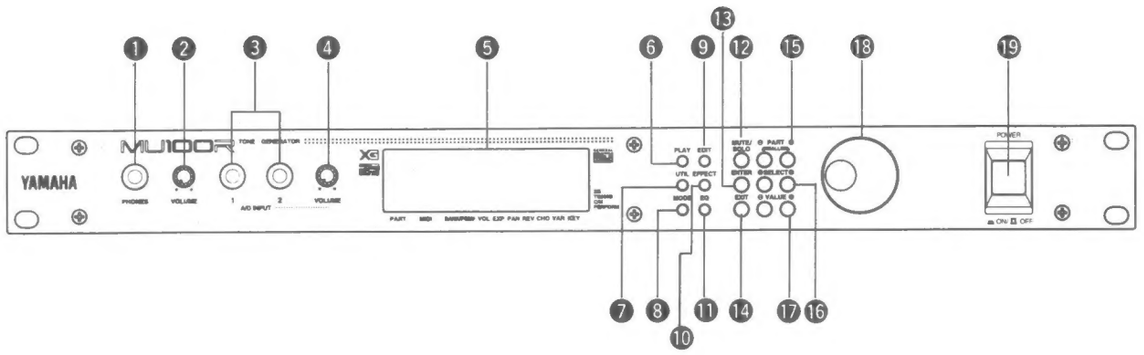
### 10. 出力レベル

本サービスマニュアルの“テストプログラム”の項目を参照して下さい。

### 11. オプション（別売品：国内モデルのみ）

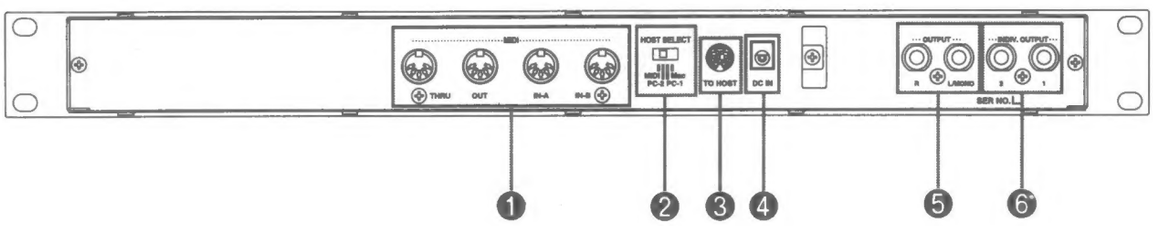
| | | |
|---|---|---|
| プラグインボード | ヤマハボーカルハーモニープラグインボード | PLG100-VH |
| | ヤマハバーチャルアコースティックプラグインボード | PLG100-VL |
| | ヤマハフォルマウントシンギングプラグインボード | PLG100-SG |

## ■ PANEL LAYOUT (パネルレイアウト)



❶ PHONES jack
❷ VOLUME control
❸ A/D INPUT 1, 2 jacks
❹ A/D INPUT VOLUME control
❺ Display
❻ PLAY button
❼ UTIL (UTILITY) button
❽ MODE button
❾ EDIT button
❿ EFFECT button
⓫ EQ button
⓬ MUTE/SOLO button
⓭ ENTER button
⓮ EXIT button
⓯ PART ⊖/⊕ buttons
⓰ SELECT ◀/▶ buttons
⓱ VALUE ⊖/⊕ buttons
⓲ DATA dial
⓳ POWER switch

❶ PHONES (ヘッドフォン) 端子
❷ VOLUME (ボリューム) 端子
❸ A/D INPUT (A/Dインプット) 1, 2端子
❹ A/D INPUT VOLUME (A/Dインプットボリューム) つまみ
❺ ディスプレイ
❻ PLAY (プレイ) ボタン
❼ UTIL (ユーティリティ) ボタン
❽ MODE (モード) ボタン
❾ EDIT (エディット) ボタン
❿ EFFECT (エフェクト) ボタン
⓫ EQ (イコライザー) ボタン
⓬ MUTE/SOLO (ミュート／ソロ) ボタン
⓭ ENTER (エンター)
⓮ EXIT (エグジット) ボタン
⓯ PART (パート) ボタン
⓰ SELECT (セレクト) ボタン
⓱ VALUE (バリュー) ボタン
⓲ ダイアル
⓳ POWER (パワー) スイッチ



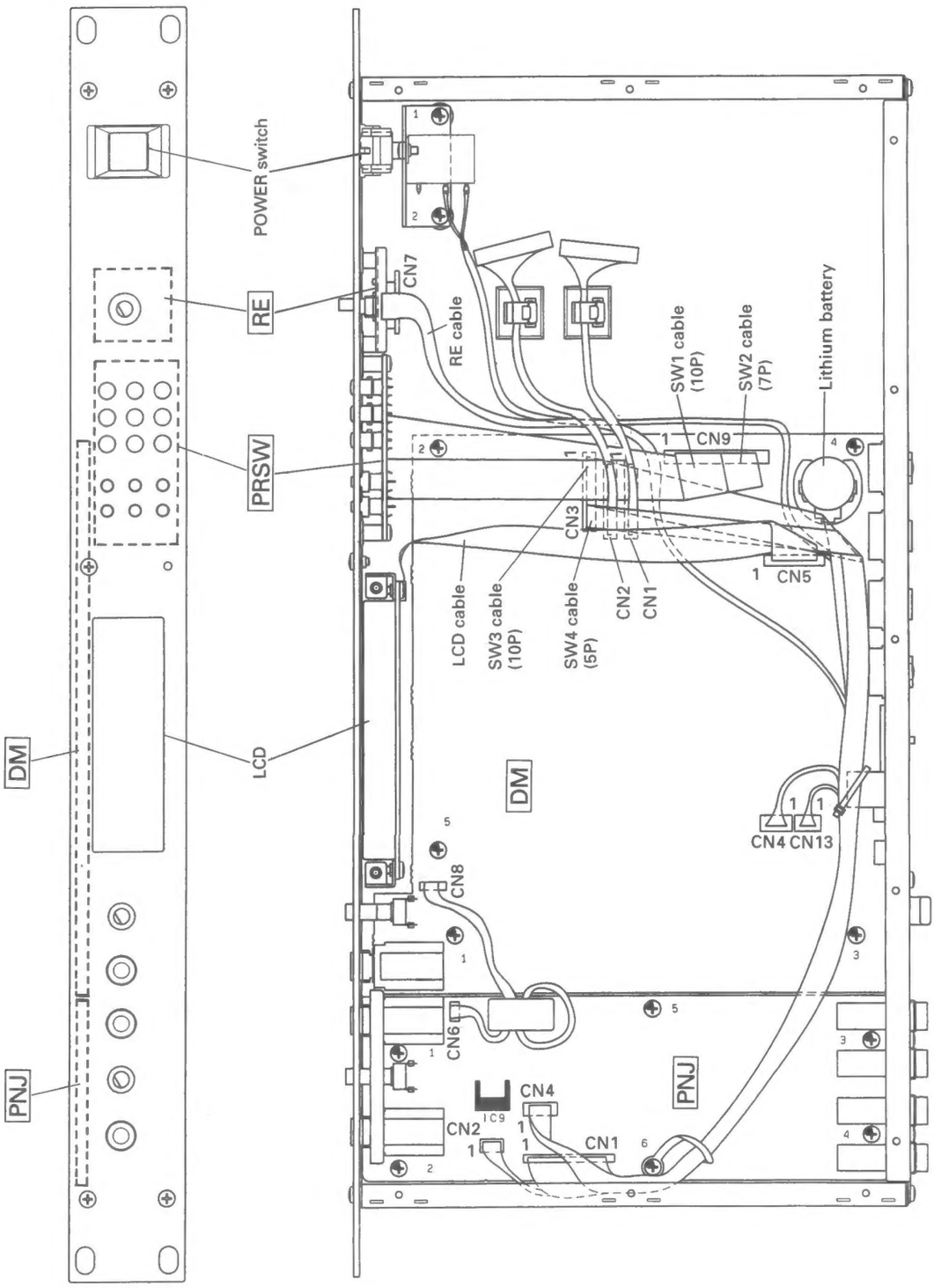
❶ MIDI THRU, MIDI OUT and MIDI IN A/B terminals
- MIDI THRU
- MIDI OUT
- MIDI IN-A
- MIDI IN-B

❷ HOST SELECT switch
❸ TO HOST terminal
❹ DC IN jack
❺ OUTPUT R, L/MONO jacks (Right, Left+/Mono)
❻ INDIV. (Individual) OUTOUT 1, 2 jacks

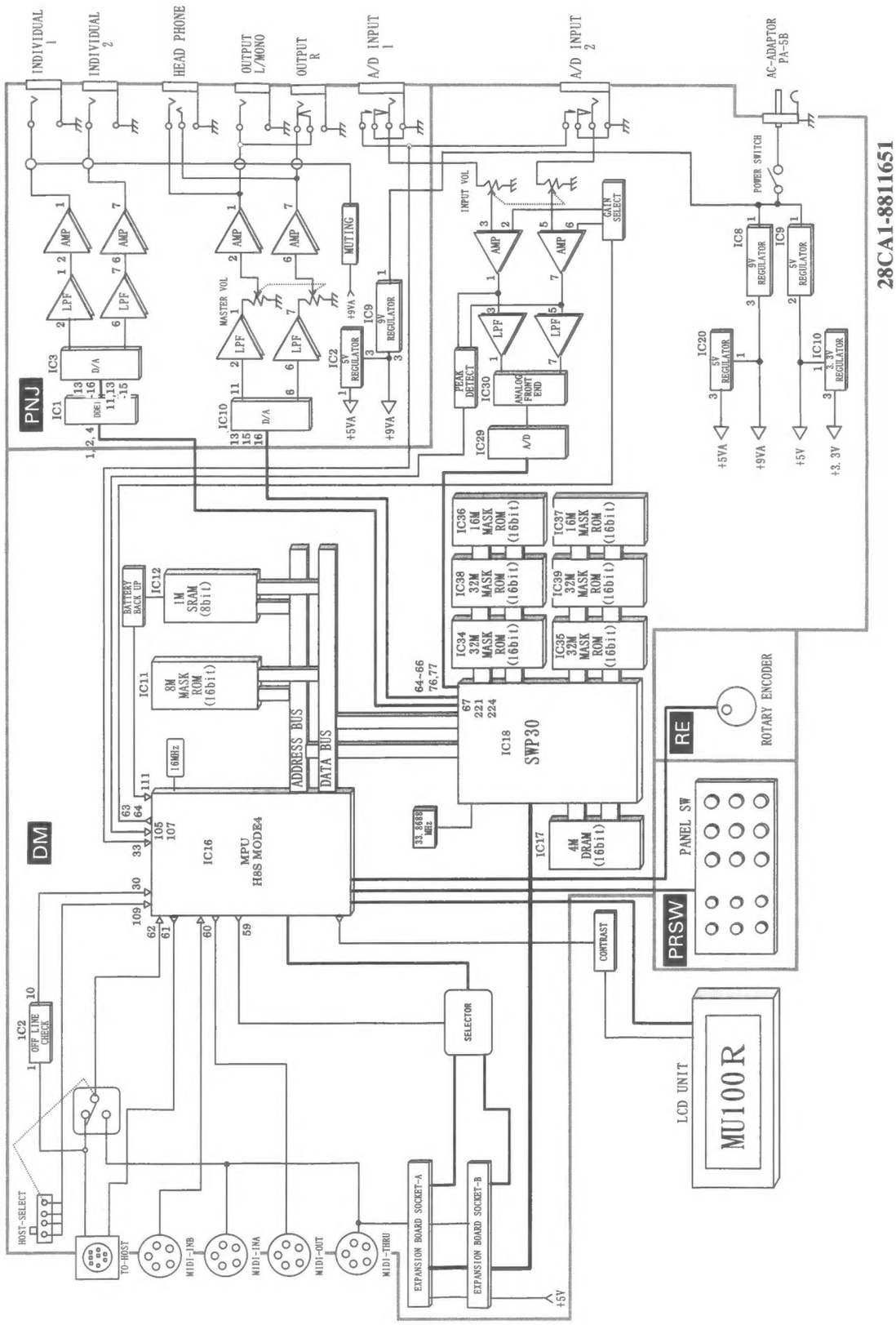
❶ MIDI (ミディ) 端子
- MIDI THRU (スルー) 端子
- MIDI OUT (アウト) 端子
- MIDI IN-A (イン-A) 端子
- MIDI IN-B (イン-B) 端子

❷ HOST SELECT (ホストセレクト) スイッチ
❸ TO HOST (トゥーホスト) 端子
❹ DC IN (ディーシーイン) 端子
❺ OUTPUT (アウトプット) 端子
❻ INDIV. OUTPUT (インディビデュアルアウトプット) 端子

## ■ CIRCUIT BOARD LAYOUT (ユニットレイアウト)



## ■ BLOCK DIAGRAM (ブロックダイアグラム)



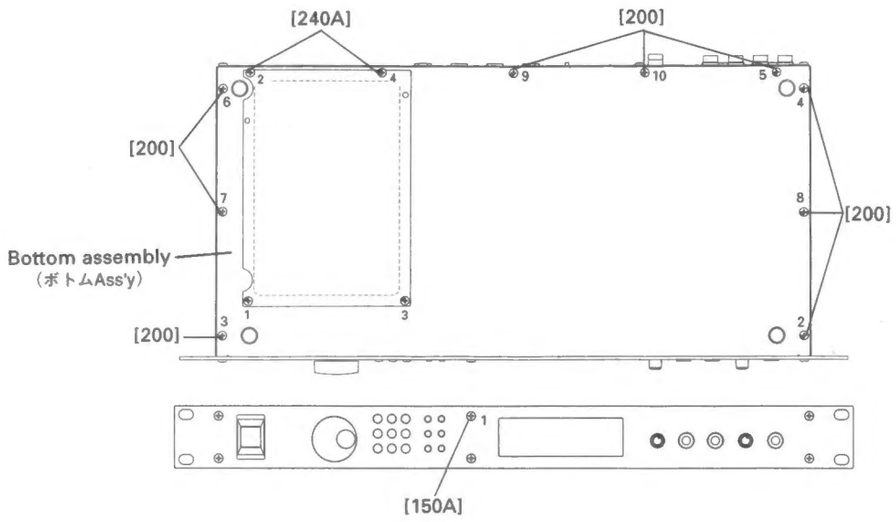
# ■ DISASSEMBLY PROCEDURE (分解手順)

### 1. Bottom Assembly

1-1 Remove the nine (9) screws marked [200], the two (2) screws marked [240A] and the screw marked [150A]. Then the bottom assembly can be removed. (Fig. 1)

### 1. ボトム Ass'y

1-1 [200]のネジ9本と、[240A]のネジ2本と、[150A]のネジ1本を外し、ボトム Ass'y を外します。（図 1）




[200]: Bind Head Tapping Screw-B 3.0X6 MFZN2BL (EP600230) ＋バインドBタイト
[240A]: Bind Head Screw 3.0X6 MFNI33 (EG330370) ＋バインド小ネジ

**(Fig. 1)**

### 2. Rear Panel Assembly

2-1 Remove the bottom assembly. (See procedure 1.)
2-2 Remove the ten (10) screws marked [80A] and the two (2) screws marked [90]. Then the rear panel assemblycan be removed. (Fig. 2)

### 3. Front Assembly

3-1 Remove the bottom assembly. (See procedure 1.)
3-2 Remove the five (5) screws marked [150B]. Then the front assembly can be removed. (Fig.2)

### 4. DM Circuit Board

4-1 Remove the bottom assembly. (See procedure 1.)
4-2 Remove the rear panel assembly. (See procedure 2.)
4-3 Remove the five (5) screws marked [60A]. Then the DM circuit board can be removed. (Fig. 2)

### 5. PNJ Circuit Board

5-1 Remove the bottom assembly. (See procedure 1.)
5-2 Remove the rear panel assembly. (See procedure 2.)
5-3 Remove the six (6) screws marked [60b];remove the PNJ circuit board. (Fig. 2)
* Pull off the VOLUME knob from the PNJ circuit board.

### 2. リアパネル Ass'y

2-1 ボトム Ass'y を外します。（1 項参照）
2-2 [80A]のネジ 10 本と[90]のネジ 2 本を外し、リアパネル Ass'y を外します。（図 2）

### 3. フロント Ass'y

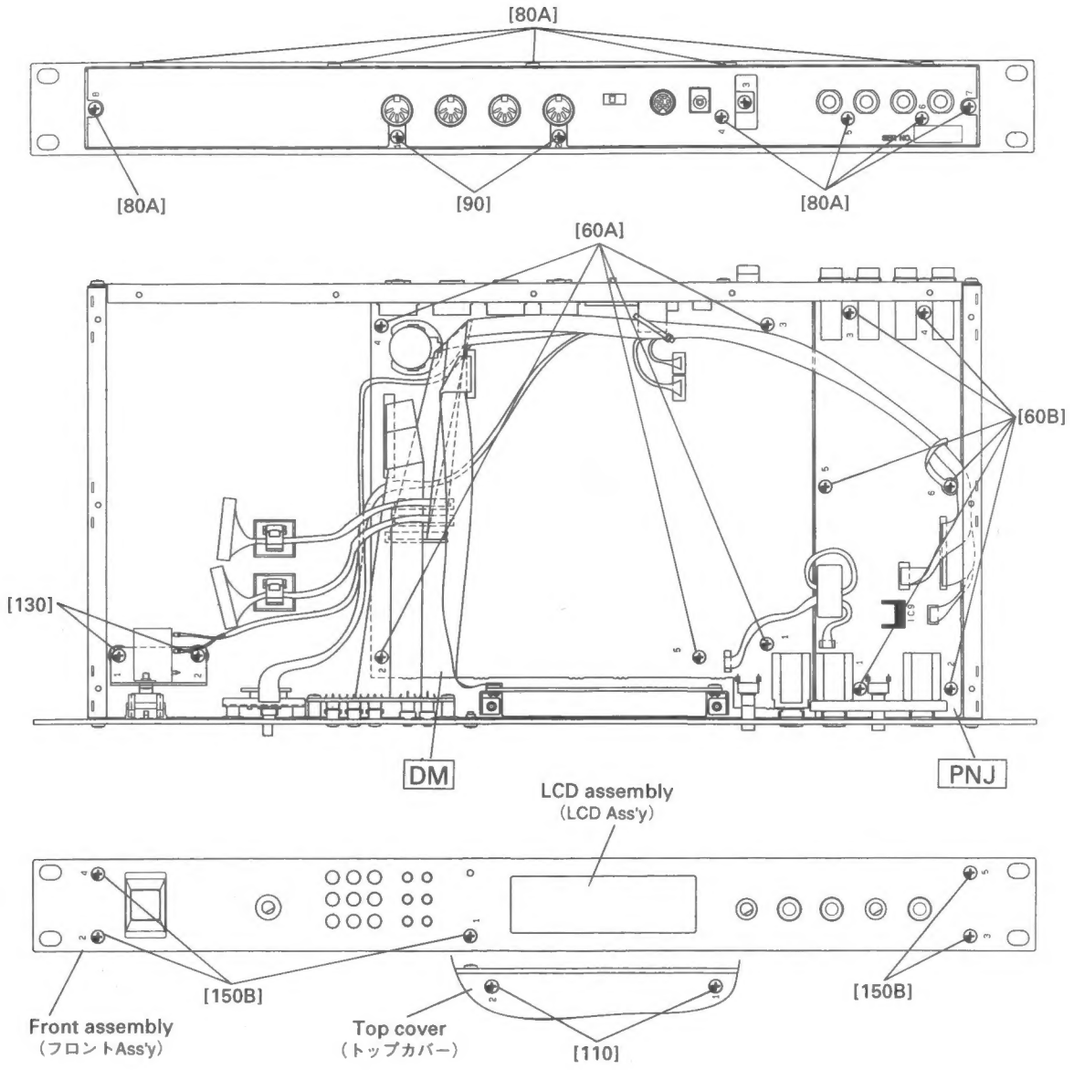
3-1 ボトム Ass'y を外します。（1 項参照）
3-2 [150B]のネジ 5 本を外し、フロント Ass'y を外します。（図 2）

### 4. DM シート

4-1 ボトム Ass'y を外します。（1 項参照）
4-2 リアパネル Ass'y を外します。（2 項参照）
4-3 [60A]のネジ 5 本を外し、DMシートを外します。（図 2）

### 5. PNJ シート

5-1 ボトム Ass'y を外します。（1 項参照）
5-2 リアパネル Ass'y を外します。（2 項参照）
5-3 [60B]のネジ 6 本を外して、PNJ シートを外します。（図 2）
＊ PNJ シートからインプットツマミを引き抜きます。



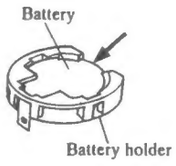

| | | | |
|---|---|---|---|
| [60A]: | Bind Head Tapping Screw-B 3.0X6 | MFZN2BL (EP600230) | ＋バインドBタイト |
| [60B]: | Bind Head Tapping Screw-B 3.0X6 | MFZN2BL (EP600230) | ＋バインドBタイト |
| [80A]: | Bind Head Tapping Screw-B 3.0X6 | MFZN2BL (EP600230) | ＋バインドBタイト |
| [90]: | Bind Head Tapping Screw-B 3.0X8 | MFZN2BL (EP600190) | ＋バインドBタイト |
| [110]: | Bind Head Tapping Screw-B 3.0X6 | MFZN2BL (EP600230) | ＋バインドBタイト |
| [130]: | Bind Head Tapping Screw-B 3.0X6 | MFZN2BL (EP600230) | ＋バインドBタイト |
| [150B]: | Bind Head Tapping Screw-B 3.0X6 | MFZN2BL (EP600230) | ＋バインドBタイト |

**(Fig. 2)**

Battery VN103500

VN103600(Battery holder for VN103500)

- Notice for back-up battery removal
  Push the battery as shown in figure, then the battery will pop up.
- Druk de batterij naar beneden zoals aangeven in de tekening, de batterij springt dan naar voren.




* The lithium battery is not a part of the DM circuit board. (リチウム電池は、DM シートの構成部品ではありません。)

### 6. RE Circuit Board
6-1 Remove the bottom assembly. (See procedure 1.)
6-2 Remove the front assembly. (See procedure 3.)
6-3 After removing the the dial knob marked [220], remove the two [2] screws marked [80B]. Then the encoder assembly can be removed. (Fig. 3, Fig. 4)
6-4 Remove the hexagonal nut marked [A]. Then the RE circuit board can be removed from the encoder assembly.(Fig. 4)

### 7. PRSW Circuit Board
7-1 Remove the bottom assembly. (See procedure 1.)
7-2 Remove the front assembly. (See procedure 3.)
7-3 Remove the four (4) screws marked [60C].Then the PRSW circuit board can be removed. (Fig. 3)

### 8. Power Switch
8-1 Remove the bottom assembly. (See procedure 1.)
8-2 Remove the two (2) screws marked [130]. Then the PSW unit can be removed. (Fig. 2, Fig. 5)
8-3 After removing the switch knob, remove the two (2) screws marked [30]. Then the Power Switch can be removed. (Fig.5)

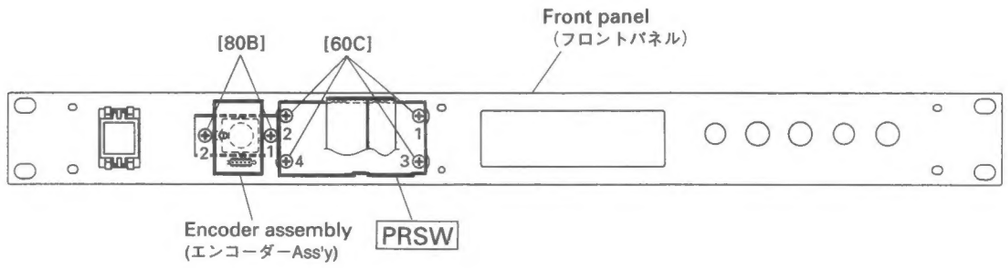
### 9. LCD Assembly
9-1 Remove the bottom assembly. (See procedure 1.)
9-2 Remove the two (2) screws marked [100]. Then the LCD assembly can be removed. (Fig. 2)

### 6. RE シート
6-1 ボトム Ass'y を外します。（1 項参照）
6-2 フロント Ass'y を外します。（3 項参照）
6-3 [220]のダイアルノブを外してから、[80B]のネジ 2 本を外し、エンコーダーAss'y を外します。（図 3、図 4）
6-4 [A]の六角ナットを外し、エンコーダーAss'y から RE シートを外します。（図 4）

### 7. PRSW シート
7-1 ボトム Ass'y を外します。（1 項参照）
7-2 フロント Ass'y を外します。（3 項参照）
7-3 [60C]のネジ 4 本を外し、PRSW シートを外します。（図 3）

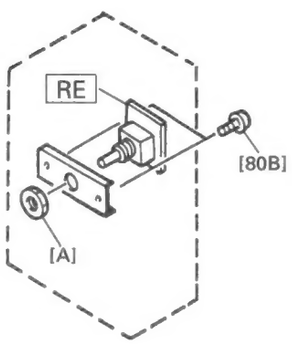
### 8. 電源スイッチ
8-1 ボトム Ass'y を外します。（1 項参照）
8-2 [130]のネジ 2 本を外し、PSW ユニットを外します。（図 2、図 5）
8-3 スイッチノブを外してから、[30]のネジ 2 本を外し、電源スイッチを外します。（図 5）

### 9. LCD Ass'y
9-1 ボトム Ass'y を外します。（1 項参照）
9-2 [100]のネジ 2 本を外し、LCDAss'y を外します。（図 2）




[60C]: Bind Head Tapping Screw-B 3.0X6 MFZN2BL (EP600230) ＋バインドＢタイト
[80B]: Bind Head Tapping Screw-B 3.0X6 MFZN2BL (EP600230) ＋バインドＢタイト

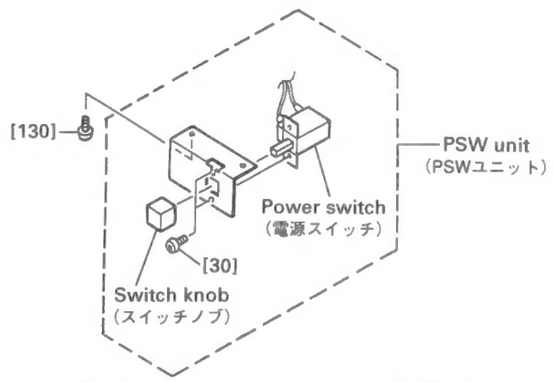
(Fig. 3)




[80B]: Bind Head Tapping Screw-B 3.0X6 MFZN2BL (EP600230) ＋バインドＢタイト
[A]: This part pertains to the RE circuit board.
（この部品は RE シートの付属部品です。）

(Fig. 4)

When you reassemble these parts, you should tighten the screws in the order described in the figure.




[30]: Bind Head Screw 3.0X6 MFZN2BL (EG330360) ＋バインド小ネジ
[130]: Bind Head Tapping Screw-B 3.0X6 MFZN2BL (EP600230) ＋バインドＢタイト

(Fig. 5)

注: これらの部品を組み付けるときは、図中に示した順序でネジを締めて下さい。

## 10. Plug-in boards

10-1 Remove the two (2) screws marked [240A] and the two (2) screws marked [240B]. Then the DB cover can be removed. (Fig. 6)

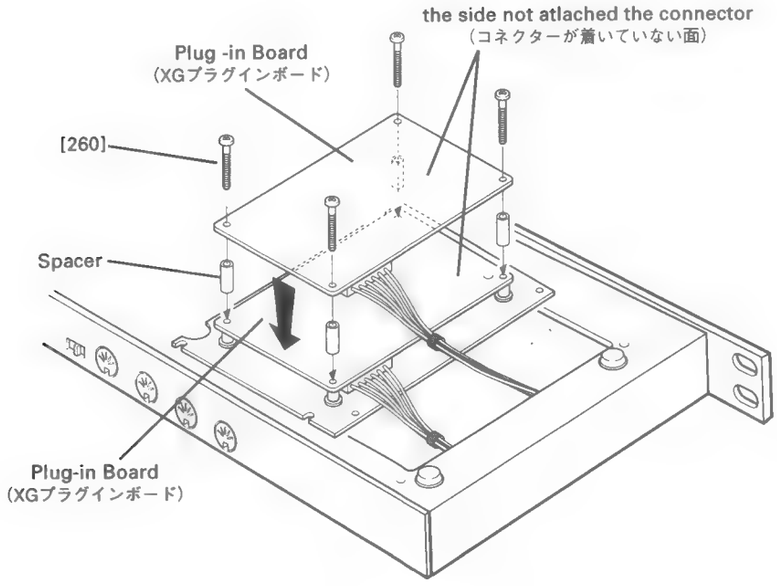
10-2 Remove the four (4) screws marked [260]. Then the plug-in boards can be removed. (Fig. 7)

## 10. プラグインボード

10-1 [240A]のネジ2本と[240B]のネジ2本を外し、プラグインボード取り付け蓋を外します。（図6）

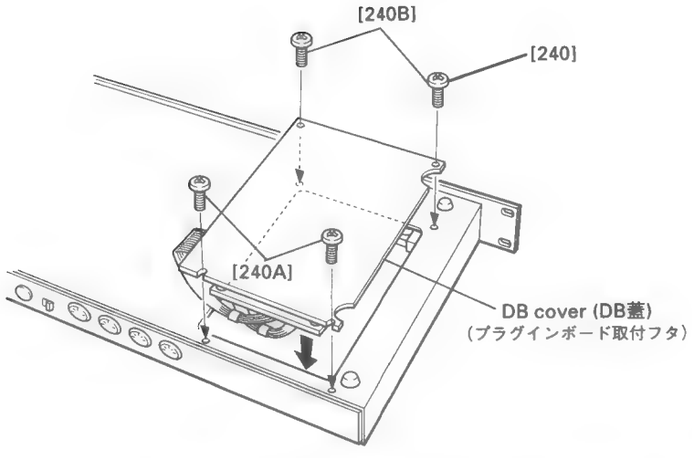
10-2 [260]のネジ4本を外し、プラグインボードを外します。（図7）

＊ 日本国内モデルでは、プラグインボードは別売のオプションでユーザー取り付けとなっています。取り付け方法については、11-14 ページを参照して下さい。




[240A]: Bind Head Screw 3.0X6　MFNI33 (EG330370) ＋バインド小ネジ
[240B]: Bind Head Screw 3.0X6　MFNI33 (EG330370) ＋バインド小ネジ

**(Fig. 6)**




[260]:　Bind Head Tapping Screw-C 3.0X20　MFZN2BL (VJ999700) ＋バインドBタイト

**(Fig. 7)**

## ● プラグインボードの取付け方法

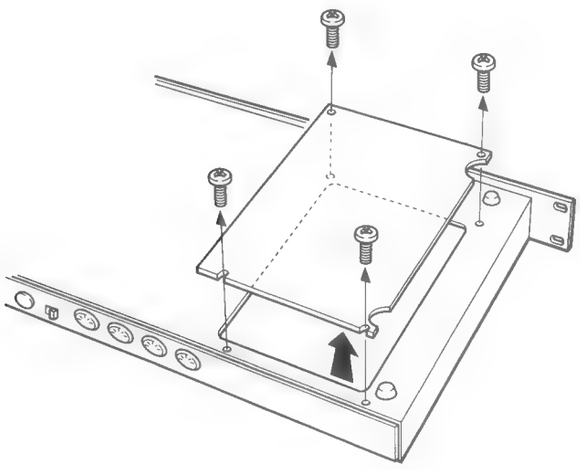
注意
- XGプラグインボードの取り付け／取り外しを行うと、MU100R本体のシステムセットアップとマルチパートなどの設定は初期化されます。大切な設定はダンプアウトの操作でコンピューターやMIDIデータファイラーMDF2などに保存してください。
- XGプラグインボードの取り付け／取り外しの際、指をはさんだり、ぶつけたりしないようにご注意ください。
- XGプラグインボードに触れる際、ボードのとがった部分などでけがをしないようにご注意ください。

手順

**1. MU100Rに接続している機器の電源を切り、MU100RのACアダプターのプラグを本体から抜きます。**

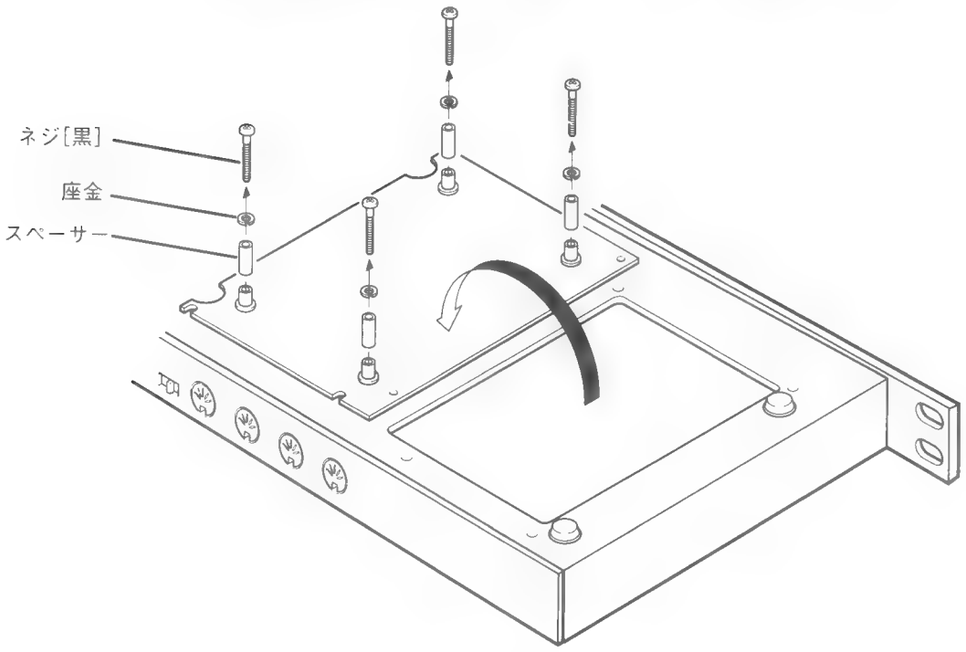
注意 MU100RのACアダプターが接続されたままでXGプラグインボードの取り付け／取り外しを行うと、故障の原因になりますので、必ずMU100RのACアダプターのプラグを本体から抜いた状態で行ってください。

**2. MU100Rを裏返します。**
**XGプラグインボード取り付けフタの4本のネジ[銀色]を取り外し、フタを外します。**



注意 **取り付けるプラグインボードによりMIDIの送受信の状態が変わりますので、必要な場合は取り付けたボードの取扱説明書を確認して下さい。**

3. あらかじめフタの裏側に取り付けられているXGプラグインボード取り付けネジ4本[黒]を取り外します。座金、スペーサーも取り外します。



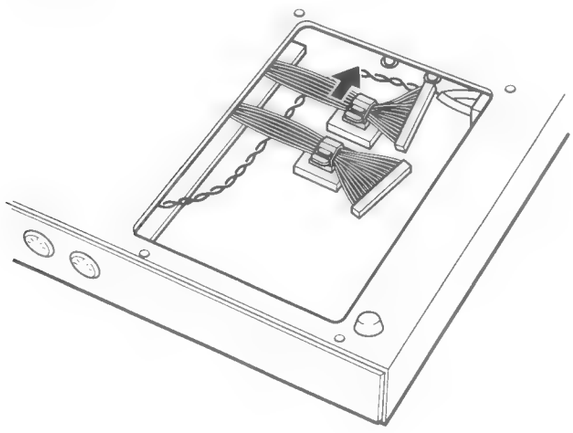

4. XGプラグインボードを静電気防止袋から取り出します。

注意

XGプラグインボードを取り扱う前に、必ずアースされている金属の表面などに触れて、服や身体の静電気を取り除いてください。また、XGプラグインボードの取り扱い時に、基板に実装されている部品やコネクター部などに触れないようご注意ください。

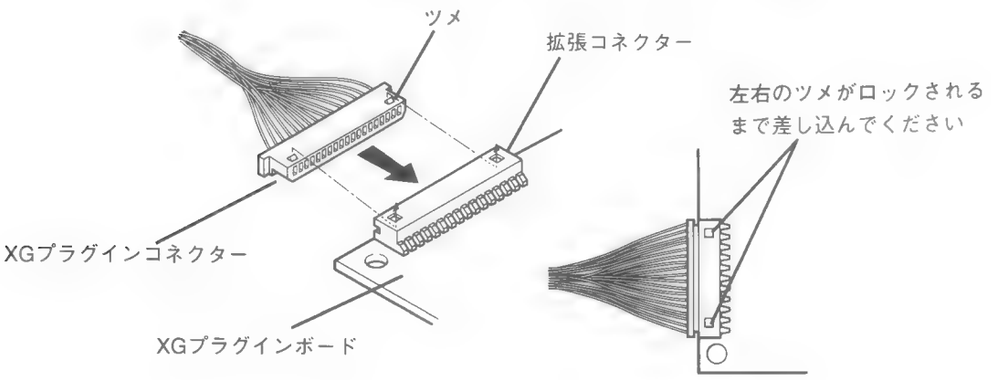
5. MU100R内のケーブルクランプを外し、拡張コネクター(どちらか1本)を引き出します。

XGプラグインボードを2枚取り付ける場合は、拡張コネクターを2本とも引き出します。なお、2本ある拡張コネクターは、それぞれ線の色が違っていますが、どちらの拡張コネクターをどちらのXGプラグインボードに差し込んでも問題ありません。



### 6. MU100Rの拡張コネクターをボードのXGプラグインコネクターに差し込みます。

この時、拡張コネクターの向きに注意し、拡張コネクターの左右のツメがロックされるまで差し込んでください(イラスト参照)。



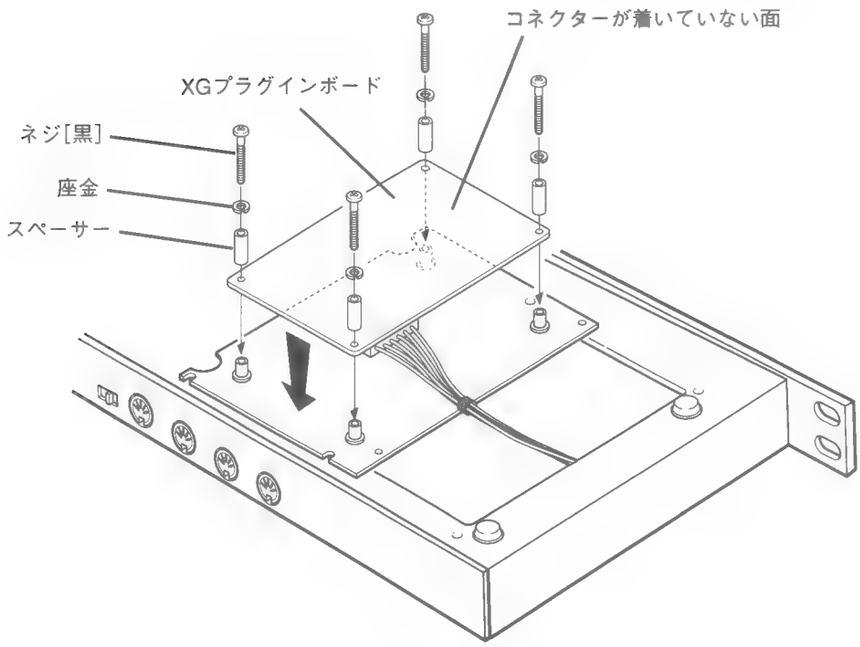

### 7. XGプラグインボードをフタに固定します。

XGプラグインボードのICチップのある面がフタ側になるように取り付けます。

注意 XGプラグインボードの穴とフタのネジ穴の位置を合わせて真上からのせてください。穴からずれた状態でフタにのせると、ボードのチップ部品を破損する恐れがあります。

#### ●XGプラグインボードを1枚取り付ける場合

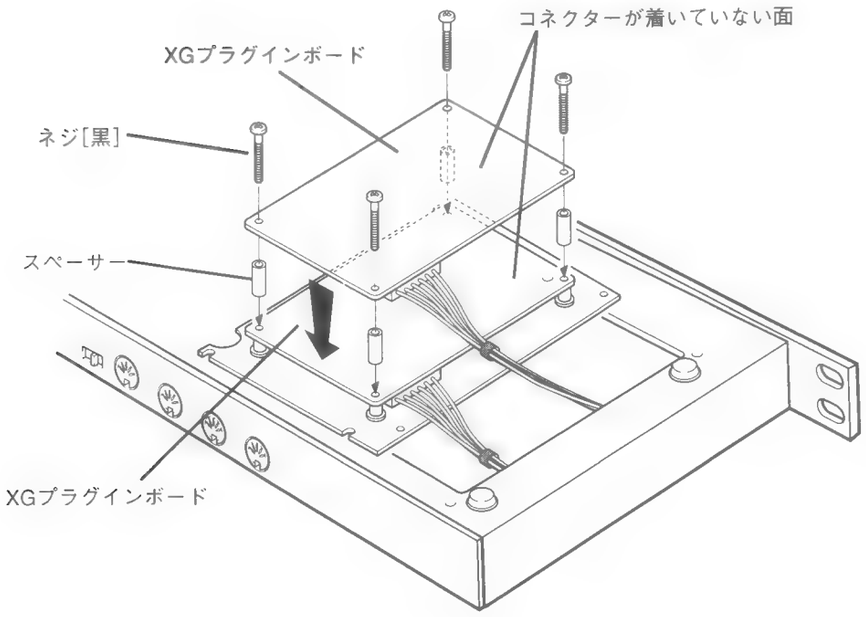
手順3で外した座金4個、スペーサー4個をネジ4本[黒]に差し込んでXGプラグインボードをフタに固定します。(イラスト参照)



**●XGプラグインボードを2枚取り付ける場合**

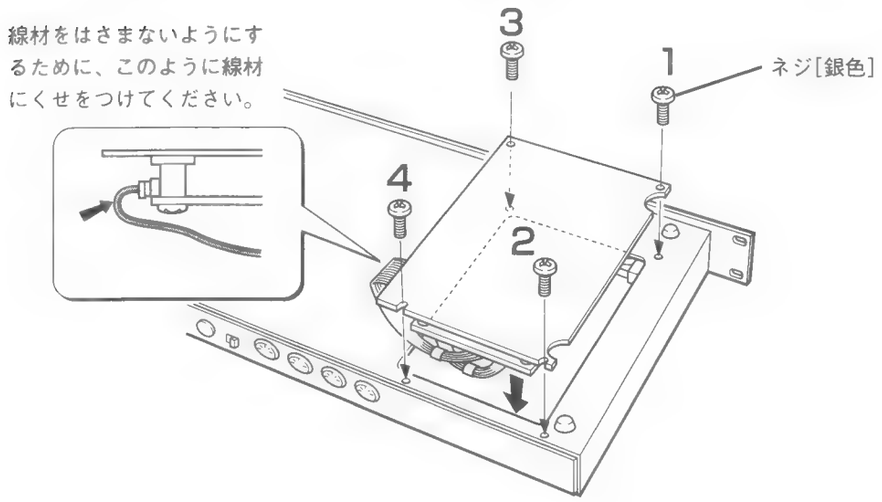
2枚のXGプラグインボードの間にスペーサーを入れ、手順3で外したネジ[黒]4本でフタに固定します。
この時、先に1ヶ所を固定してから他の3ヶ所を固定すると、作業が容易に行えます。

注意 **2枚のXGプラグインボードを取り付ける場合は、座金を使用しないでください。**




**8. 手順2で外した4本のネジ[銀色]で、線材をはさまないようにして、XGプラグインボード取り付けフタを固定します。**

この時、イラストに示すネジの番号順に必ずネジを締め付けてください。



# ■ LSI PIN DESCRIPTION (LSI端子機能表)

## • HD6432653 (XT443A00) CPU

| PIN NO. | NAME | I/O | FUNCTION | PIN NO. | NAME | I/O | FUNCTION |
|---|---|---|---|---|---|---|---|
| 1 | CS1 | O | Chip Select for System RAM (CS1) | 65 | Vss | - | GND |
| 2 | CS0 | O | Chip Select for System RAM (CS0) | 66 | P60 | O | NC |
| 3 | Vss | - | | 67 | Vss | - | GND |
| 4 | Vss | - | GND | 68 | Vss | - | GND |
| 5 | Vcc | - | Power Supply | 69 | P61 | O | NC |
| 6 | A0 | O | | 70 | P62 | O | PB Select (SW1) |
| 7 | A1 | O | | 71 | P63 | O | PB Select (SW2) |
| 8 | A2 | O | Address Bus | 72 | P27 | O | NC |
| 9 | A3 | O | | 73 | P26 | O | 1 MHz Clock for Serial Interface |
| 10 | Vss | - | GND | 74 | P25 | O | LCD Contrast (LCDC-C) |
| 11 | A4 | O | | 75 | P24 | O | LCD Contrast (LCDC-B) |
| 12 | A5 | O | | 76 | P23 | O | LCD Contrast (LCDC-A) |
| 13 | A6 | O | | 77 | P22 | O | LCD Control (LCD-E) |
| 14 | A7 | O | | 78 | P21 | O | LCD Control (LCD-R/W) |
| 15 | A8 | O | Address Bus | 79 | P20 | O | LCD Control (LCD-RS) |
| 16 | A9 | O | | 80 | WDT0VF | O | NC |
| 17 | A10 | O | | 81 | RES | I | Reset Signal |
| 18 | A11 | O | | 82 | NMI | I | not used |
| 19 | Vss | - | GND | 83 | STBV | I | not used |
| 20 | A12 | O | | 84 | Vcc | - | Power Supply |
| 21 | A13 | O | | 85 | XTAL | | Quartz Cristal 16MHz |
| 22 | A14 | O | | 86 | EXTAL | | Quartz Cristal 16MHz |
| 23 | A15 | O | | 87 | Vss | - | GND |
| 24 | A16 | O | Address Bus | 88 | $\phi$ | | NC |
| 25 | A17 | O | | 89 | Vcc | - | Power Supply |
| 26 | A18 | O | | 90 | AS | O | NC |
| 27 | A19 | O | | 91 | RD | O | Read Signal |
| 28 | Vss | - | GND | 92 | HWR | O | Write Signal |
| 29 | A20 | O | Address Bus | 93 | LWR | O | NC |
| 30 | PA5 | I | Off Line Detection | 94 | PF2 | O | PB Select (SW4) |
| 31 | PA6 | O | Signal for Rotary encoder(REB) | 95 | PF1 | O | SW Data Read Control (SWD) |
| 32 | PA7 | O | Signal for Rotary encoder(REA) | 96 | PF0 | O | LED,SW Strobe Data Latch |
| 33 | P67 | I | Plug Detection of A/D Input | 97 | TXD2 | O | Serial Output for PB (TXD2) |
| 34 | P66 | O | NC | 98 | RXD2 | I | Serial Input for PB (RXD2) |
| 35 | Vss | - | GND | 99 | Vss | - | GND |
| 36 | Vss | - | GND | 100 | Vss | - | GND |
| 37 | P65 | O | Reset Signal for SWP30 | 101 | SCK2 | O | Serial Sync Clock for PB |
| 38 | P64 | O | Reset Signal for PB | 102 | P53 | O | Reset Signal for Rotary Encoder |
| 39 | Vcc | - | Power Supply | 103 | AVcc | I | Power Supply for A/D |
| 40 | D0 | I/O | | 104 | Vref | I | Reference Voltage for A/D |
| 41 | D1 | I/O | | 105 | AN0 | I | Analog Level Input R |
| 42 | D2 | I/O | Two Way Data Bus | 106 | AN1 | I | not used |
| 43 | D3 | I/O | | 107 | AN2 | I | Analog Level Output L |
| 44 | Vss | - | GND | 108 | AN3 | I | not used |
| 45 | D4 | I/O | | 109 | AN4 | I | Detection of Host SW Position |
| 46 | D5 | I/O | | 110 | AN5 | I | not used |
| 47 | D6 | I/O | | 111 | AN6 | I | Battery Voltage Check |
| 48 | D7 | I/O | | 112 | AN7 | I | ModelCheck (MU100:GND) |
| 49 | D8 | I/O | Two Way Data Bus | 113 | AVss | - | GND |
| 50 | D9 | I/O | | 114 | Vss | - | GND |
| 51 | D10 | I/O | | 115 | P17 | I/O | LCD Data(DB7),SW Data,LED6 |
| 52 | D11 | I/O | | 116 | P16 | I/O | LCD Data(DB6),SW Strobe Data |
| 53 | Vss | - | GND | 117 | P15 | I/O | LCD Data(DB5),SW Strobe Data |
| 54 | D12 | I/O | | 118 | P14 | I/O | LCD Data(DB4),SW Data,LED5 |
| 55 | D13 | I/O | | 119 | P13 | I/O | LCD Data(DB3),SW Data,LED4 |
| 56 | D14 | I/O | Two Way Data Bus | 120 | P12 | I/O | LCD Data(DB2),SW Data,LED3 |
| 57 | D15 | I/O | | 121 | P11 | I/O | LCD Data(DB1),SW Data,LED2 |
| 58 | Vcc | - | Power Supply | 122 | P10 | I/O | LCD Data(DB0),SW Data,LED1 |
| 59 | TXD0 | O | Serial MIDI OUT (TXD0) | 123 | MD0 | I | GND |
| 60 | TXD1 | O | Serial Host OUT (TXD1) | 124 | MD1 | I | GND |
| 61 | RXD0 | I | Serial MIDI IN B (RXD0) | 125 | MD2 | I | +5D |
| 62 | RXD1 | I | Serial MIDI IN A (RXD1) or Host IN | 126 | PG0 | O | PB Select (SW3) |
| 63 | P34 | O | A/D Gain Control Signal(ADG1) | 127 | CS3 | O | NC |
| 64 | P35 | O | A/D Gain Control Signal(ADG2) | 128 | CS2 | O | Chip Select for SWP30 (CS2) |

**SWP30** (AWM Tone Generator coped with MEG) Standard Wave Processor)

| PIN NO | NAME | I/O | FUNCTION |
|---|---|---|---|
| 1 | Vss | | (Ground) |
| 2 | CA0 | I | Address bus of internal register |
| 3 | CA1 | I | |
| 4 | CA2 | I | |
| 5 | CA3 | I | |
| 6 | CA4 | I | |
| 7 | CA5 | I | |
| 8 | CA6 | I | |
| 9 | CA7 | I | |
| 10 | CA8 | I | |
| 11 | CA9 | I | |
| 12 | CA10 | I | |
| 13 | CA11 | I | |
| 14 | VSS | | (Ground) |
| 15 | CD0 | I/O | Data bus of internal register |
| 16 | CD1 | I/O | |
| 17 | CD2 | I/O | |
| 18 | CD3 | I/O | |
| 19 | CD4 | I/O | |
| 20 | CD5 | I/O | |
| 21 | CD6 | I/O | |
| 22 | CD7 | I/O | |
| 23 | CD8 | I/O | |
| 24 | CD9 | I/O | |
| 25 | CD10 | I/O | |
| 26 | CD11 | I/O | |
| 27 | CD12 | I/O | |
| 28 | CD13 | I/O | |
| 29 | CD14 | I/O | |
| 30 | VDD | | (Power supply) |
| 31 | VSS | | (Ground) |
| 32 | CD15 | I/O | |
| 33 | /CS | I | Chip select |
| 34 | /WR | I | Write strobe |
| 35 | /RD | I | Read strobe |
| 36 | VDDS | | (Power supply) |
| 37 | SYSH0 | O | NSYS/LNSYS upper 16 bits |
| 38 | SYSH1 | O | |
| 39 | SYSH2 | O | |
| 40 | SYSH3 | O | |
| 41 | SYSH4 | O | |
| 42 | SYSH5 | O | |
| 43 | SYSH6 | O | |
| 44 | SYSH7 | O | |
| 45 | KONO0 | O | Key on data |
| 46 | KONO1 | O | |
| 47 | KONO2 | O | |
| 48 | KONO3 | O | |
| 49 | VSS | | (Ground) |
| 50 | SYSL0 | I/O | NSYS input/LNSYS output lower 8 bits |
| 51 | SYSL1 | I/O | |
| 52 | SYSL2 | I/O | |
| 53 | SYSL3 | I/O | |
| 54 | SYSL4 | I/O | |
| 55 | SYSL5 | I/O | |
| 56 | SYSL6 | I/O | |
| 57 | SYSL7 | I/O | |
| 58 | KONI0 | I | Key on data |
| 59 | KONI1 | I | |
| 60 | VDDS | I | (Power supply) |
| 61 | VSS | | (Ground) |
| 62 | KONI2 | I | |
| 63 | KONI3 | I | |
| 64 | DAC0 | O | DAC output |
| 65 | DAC1 | O | |
| 66 | WCLK | O | DAC0/DAC1 word clock |
| 67 | MELO0 | O | MEL wave data output |
| 68 | MELO1 | O | |
| 69 | MELO2 | O | |
| 70 | MELO3 | O | |
| 71 | MELO4 | O | |
| 72 | MELO5 | O | |
| 73 | MELO6 | O | |
| 74 | MELO7 | O | |
| 75 | VDDS | | (Power supply) |
| 76 | ADLR | O | ADC word clock |
| 77 | MELI0 | I | MEL wave data input |
| 78 | MELI1 | I | |
| 79 | MELI2 | I | |
| 80 | MELI3 | I | |
| 81 | MELI4 | I | |
| 82 | MELI5 | I | |
| 83 | MELI6 | I | |
| 84 | MELI7 | I | |
| 85 | VSS | | (Ground) |
| 86 | /RCAS | O | DRAM column address strobe |
| 87 | RA8 | O | DRAM address bus |
| 88 | RA7 | O | |
| 89 | RA6 | O | |
| 90 | VDD | | (Power supply) |
| 91 | VSS | | (Ground) |
| 92 | RA5 | O | |
| 93 | RA4 | O | |
| 94 | RA3 | O | |
| 95 | RA2 | O | |
| 96 | RA1 | O | |
| 97 | RA0 | O | |
| 98 | /RRAS | O | DRAM row address strobe |
| 99 | /RWE | O | DARM write enable |
| 100 | VSS | | (Ground) |
| 101 | RD7 | I/O | DRAM data bus |
| 102 | RD6 | I/O | |
| 103 | RD5 | I/O | |
| 104 | RD4 | I/O | |
| 105 | RD3 | I/O | |
| 106 | RD2 | I/O | |
| 107 | RD1 | I/O | |
| 108 | RD0 | I/O | |
| 109 | VSS | | (Ground) |
| 110 | RD17 | I/O | |
| 111 | RD16 | I/O | |
| 112 | RD15 | I/O | |
| 113 | RD14 | I/O | |
| 114 | RD13 | I/O | |
| 115 | RD12 | I/O | |
| 116 | RD11 | I/O | |
| 117 | RD10 | I/O | |
| 118 | RD9 | I/O | |
| 119 | RD8 | I/O | |
| 120 | VDDS | | (Power supply) |

| PIN NO. | NAME | I/O | FUNCTION |
|---|---|---|---|
| 121 | VSS | | (Ground) |
| 122 | HMD0 | I/O | Wave memory data bus (Upper data memory) |
| 123 | HMD1 | I/O | |
| 124 | HMD2 | I/O | |
| 125 | HMD3 | I/O | |
| 126 | HMD4 | I/O | |
| 127 | HMD5 | I/O | |
| 128 | HMD6 | I/O | |
| 129 | HMD7 | I/O | |
| 130 | HMD8 | I/O | |
| 131 | HMD9 | I/O | |
| 132 | HMD10 | I/O | |
| 133 | HMD11 | I/O | |
| 134 | HMD12 | I/O | |
| 135 | HMD13 | I/O | |
| 136 | HMD14 | I/O | |
| 137 | HMD15 | I/O | |
| 138 | VSS | | (Ground) |
| 139 | HMA0 | O | Wave memory address bus (Upper 16 bits) |
| 140 | HMA1 | O | |
| 141 | HMA2 | O | |
| 142 | HMA3 | O | |
| 143 | HMA4 | O | |
| 144 | HMA5 | O | |
| 145 | HMA6 | O | |
| 146 | HMA7 | O | |
| 147 | HMA8 | O | |
| 148 | HMA9 | O | |
| 149 | HMA10 | O | |
| 150 | VSS | | (Ground) |
| 151 | VDD | | (Power supply) |
| 152 | HMA11 | O | |
| 153 | HMA12 | O | |
| 154 | HMA13 | O | |
| 155 | HMA14 | O | |
| 156 | HMA15 | O | |
| 157 | HMA16 | O | |
| 158 | HMA17 | O | |
| 159 | HMA18 | O | |
| 160 | HMA19 | O | |
| 161 | HMA20 | O | |
| 162 | HMA21 | O | |
| 163 | HMA22 | O | |
| 164 | HMA23 | O | |
| 165 | HMA24 | O | |
| 166 | VSS | | (Ground) |
| 167 | /MRAS | O | RAS when DRAM(s) is connected to wave memory |
| 168 | /MCAS | O | CAS when DRAM(s) is connected to wave memory |
| 169 | /MOE | O | Wave memory output enable |
| 170 | /MWE | O | Wave memory write enable |
| 171 | VSS | | (Ground) |
| 172 | LMD0 | I/O | Wave memory data bus (Lower data memory) |
| 173 | LMD1 | I/O | |
| 174 | LMD2 | I/O | |
| 175 | LMD3 | I/O | |
| 176 | LMD4 | I/O | |
| 177 | LMD5 | I/O | |
| 178 | LMD6 | I/O | |
| 179 | LMD7 | I/O | |
| 180 | VDDS | | (Power supply) |
| 181 | VSS | | (Ground) |
| 182 | LMD8 | I/O | |
| 183 | LMD9 | I/O | |
| 184 | LMD10 | I/O | |
| 185 | LMD11 | I/O | |
| 186 | LMD12 | I/O | |
| 187 | LMD13 | I/O | |
| 188 | LMD14 | I/O | |
| 189 | LMD15 | I/O | |
| 190 | VSS | | (Ground) |
| 191 | LMA0 | O | Wave memory address bus (Lower data memory) |
| 192 | LMA1 | O | |
| 193 | LMA2 | O | |
| 194 | LMA3 | O | |
| 195 | LMA4 | O | |
| 196 | LMA5 | O | |
| 197 | LMA6 | O | |
| 198 | LMA7 | O | |
| 199 | LMA8 | O | |
| 200 | LMA9 | O | |
| 201 | LMA10 | O | |
| 202 | LMA11 | O | |
| 203 | VSS | | (Ground) |
| 204 | LMA12 | O | |
| 205 | LMA13 | O | |
| 206 | LMA14 | O | |
| 207 | LMA15 | O | |
| 208 | LMA16 | O | |
| 209 | LMA17 | O | |
| 210 | VDD | | (Power supply) |
| 211 | VSS | | (Ground) |
| 212 | LMA18 | O | |
| 213 | LMA19 | O | |
| 214 | LMA20 | O | |
| 215 | LMA21 | O | |
| 216 | LMA22 | O | |
| 217 | LMA23 | O | |
| 218 | LMA24 | O | |
| 219 | VSS | | (Ground) |
| 220 | SYO | O | Sync. signal for master clock |
| 221 | SYOD | O | Sync. signal for HCLK/QCLK |
| 222 | QCLK | O | 1/12 master clock (64Fs) |
| 223 | HCLK | O | 1/6 master clock (128Fs) |
| 224 | CK256 | O | 1/3 master clock (256Fs) |
| 225 | SYSCLK | O | 1/2 master clock (384Fs) |
| 226 | VDDS | | (Power supply) |
| 227 | SYI | I | Sync. clock |
| 228 | MCLKI | I | Master clock input |
| 229 | MCLKO | O | Master clock output |
| 230 | VDD | | (Power supply) |
| 231 | XIN | I | Crystal osc. input |
| 232 | XOUT | O | Crystal osc. output |
| 233 | VSS | | (Ground) |
| 234 | /IC | I | Initial clear |
| 235 | CHIP2 | I | 2 chips mode enable |
| 236 | SLAVE | I | Master/Slave select when 2 chips mode |
| 237 | /TESTO | I | Test pin |
| 238 | /ACI | I | |
| 239 | DCTEST | I | |
| 240 | VDDS | | (Power supply) |

- **μPD63200GS** (XM145A00) DAC (Digital to Analog Converter)

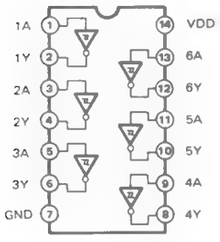
| PIN NO. | NAME | I/O | FUNCTION | PIN NO. | NAME | I/O | FUNCTION |
|---|---|---|---|---|---|---|---|
| 1 | 4/8F | I | 4/8 Fs selection | 9 | R. REF | | Channel R voltage reference |
| 2 | D. GND | | Digital ground | 10 | L. REF | | Channel L voltage reference |
| 3 | 16 BIT | I | 16 bit/18 bit selection | 11 | L. OUT | O | Channel L output |
| 4 | D. VDD | | Digital power supply | 12 | A. GND | | Analog ground |
| 5 | A. GND | | Analog ground | 13 | WDCK | I | Word clock |
| 6 | R. OUT | O | Channel R output | 14 | RSI | I | Channel R series input |
| 7 | A. VDD | | } Analog power supply | 15 | SI/LSI | I | Series input/Channel L series input |
| 8 | A. VDD | | } | 16 | CLK | I | Clock |

- **JG710069** (XM326B00) **DDE1** (DAC Dynamic Range Enhancer)

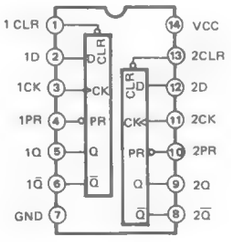
| PIN NO. | NAME | I/O | FUNCTION | PIN NO. | NAME | I/O | FUNCTION |
|---|---|---|---|---|---|---|---|
| 1 | CLK | I | Master clock | 9 | SH 0 | O | N.C. |
| 2 | SYW | I | Sync signal | 10 | SH 1 | O | N.C. |
| 3 | MIN 1 | I | Signal input | 11 | LE | O | Latch enable for DAC |
| 4 | MIN 0 | I | Signal input | 12 | $V_{DD}$ | | |
| 5 | Vss | | | 13 | DACO 0 | O | Output (DAC) |
| 6 | SEL 1 | I | Mode select | 14 | DACO 1 | O | Output (DAC) |
| 7 | SEL 0 | I | Mode select | 15 | DCLK | O | Clock for DAC |
| 8 | SUP | I | 1 bit shift up input | 19 | ICN | I | Initial clear |

## ■ IC BLOCK DIAGRAM (ICブロック図)

- **SN74HC14AF-TP1** (XD657A00)
  Hex Inverter

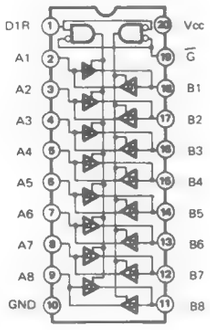



- **SN74HC74NSR** (XC726A00)
  Dual D-Type Flip-Flop

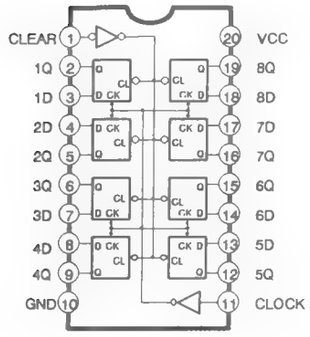



| INPUTS | | | | OUTPUTS | |
|---|---|---|---|---|---|
| PR | CLR | CLK | D | Q | Q̄ |
| L | H | X | X | H | L |
| H | L | X | X | L | H |
| L | L | X | X | H | H |
| H | H | ↑ | H | H | L |
| H | H | ↑ | L | L | H |
| H | H | L | X | $Q_0$ | $\bar{Q}_0$ |

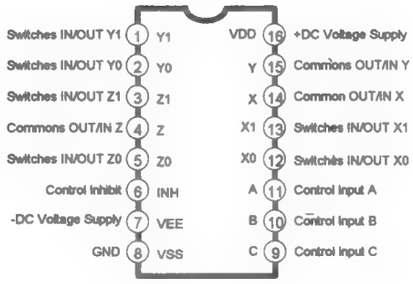
- **TC74HC245F-T1** (XD603A00)
  Octal 3-State Bus Transceiver



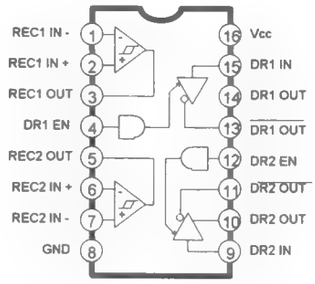
- **SN74HC273NSR** (XH223A00)
  Octal D-Type Flir Flop



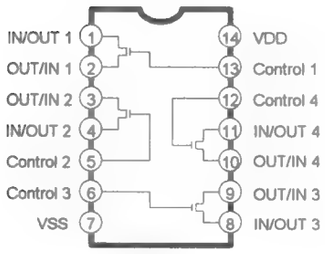

- **TC74HC4051AF-TP** (XR056A00)
  Triple 2-channel Multiplexer /Demultiplexer



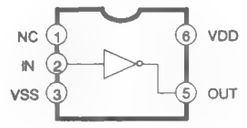

- **MC34051MEL** (XP881A00)
  Dual EIA-422/423 Line Transceiver



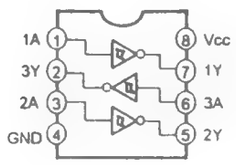

- **TC74HC4066AF-T1** (XG385A00)
  Quad Bilateral Analog Switch



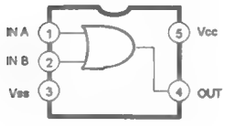

- **SC7SU04FER** (XI348A00)
  Inverter



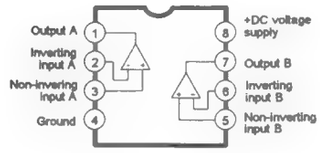

- **TC7W14F** (XR336A00)
- **TC7W14FU** (XN883A00)
  Triple Inverter



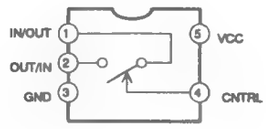

- **TC7S32F** (XM588A00)
  OR



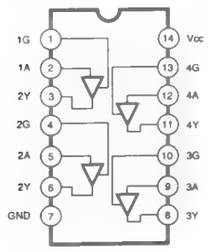

- **µPC4570G2** (XF291A00)
- **NJM4556AMT1** (XQ138A00)
  Dual Operational Amplifier



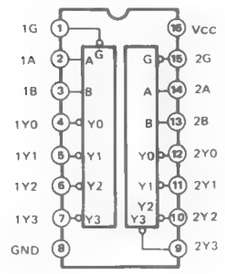

- **TC7S66F** (XR682A00)
  Bilateral Switch



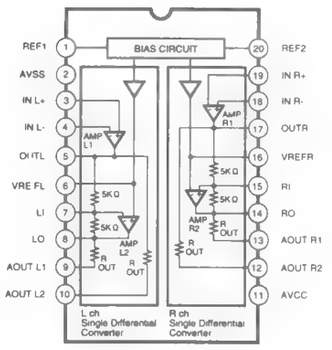
- **TC74HC126AF** (XS776A00)
  Bus Buffer



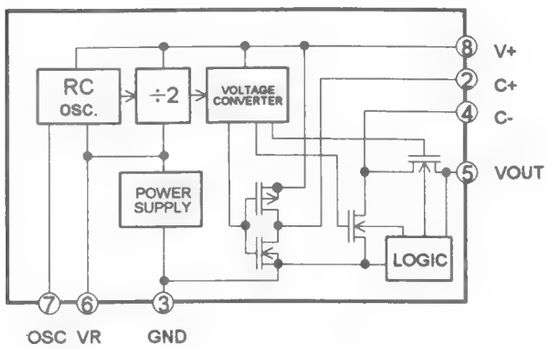

- **TC74LVC139FP** (XS048A00)
  Dual 2 to 4 Demultiplexer

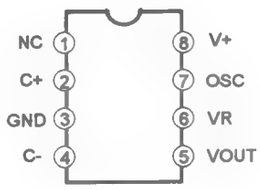



- **TL32088** (XS893A00)
  AD FRONT END

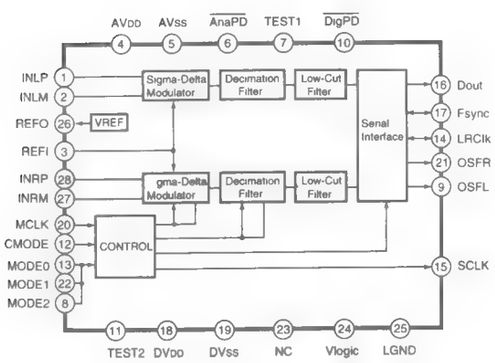


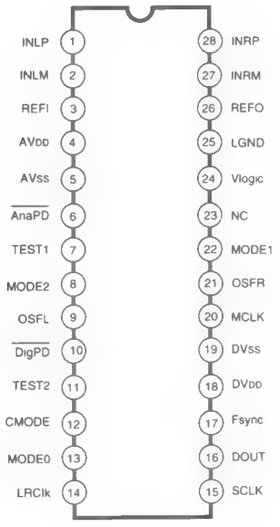

- **NJU7660M-T1** (XP596A00)
  DC/DC Voltage Converter




- **TL320AD58C** (XS892A00)



# ■ TEST PROGRAM

## PREPARATIONS

The following measuring instruments and jigs are necessary during the test.

Measuring instruments:
Audio signal generator, oscilloscope,
Amplifier/Speaker system, etc.

Jigs: MIDI cables, etc.

| No. | Test | Remarks |
|---|---|---|
| A | TEST ENTRY | |
| B | PROCEEDING THROUGH THE TEST AND SELECTION WHEN AN ERROR IS DETECTED | |
| 1 | SRAM | SRAM Read/Write |
| 2 | BATTERY | A/D check on CPU |
| 3 | LCD ALL DOTS ON | |
| 4 | SWITCH & LED | SWITCH ON/OFF & LED ON/OFF |
| 5 | DIAL | Dial function |
| 6 | MIDI 1 | Connect MIDI IN A to MIDI OUT |
| 7 | MIDI 2 | Connect MIDI IN A to MIDI OUT |
| 8 | HOST SELECT | Slide HOST SELECT |
| 9 | TO HOST TX/RX | Factory use |
| 10 | WAVE ROM | WAVE ROM READ |
| 11 | 1 kHz OUTPUT(L) | Using measuring instruments |
| 12 | 1 kHz OUTPUT(R) | Using measuring instruments |
| 13 | 1 kHz INDIV.OUT1 | Using measuring instruments |
| 14 | 1 kHz INDIV.OUT2 | Using measuring instruments |
| 15 | INPUT HIGH | Using measuring instruments |
| 16 | INPUT LOW | Using measuring instruments |
| 17 | MEG&DRAM | Using measuring instruments |
| 18 | 64 SOUNDS OUTPUT | By listening |
| 19 | FACTORY SETTINGS | |
| 20 | EXIT | |
| 21 | PB1 NAME | Circuit Board test of CN 1 |
| 22 | PB1 RAM | Circuit Board test of CN 1 |
| 23 | PB1 MIDI IN | Circuit Board test of CN 1 |
| 24 | PB1 MEL | Circuit Board test of CN 1 |
| 25 | PB2 NAME | Circuit Board test of CN 2 |
| 26 | PB2 RAM | Circuit Board test of CN 2 |
| 27 | PB2 MIDI IN | Circuit Board test of CN 2 |
| 28 | PB2 MEL | Circuit Board test of CN 2 |

## A. HOW TO ENTER THE TEST PROGRAM

While pressing the [PLAY] and the [MUTE/SOLO] buttons, turn the MU100R POWER switch on.
When the test program is initiated, the version of the program ROM will appear on the LCD.

```
MU100R TEST MODE
Ver#.## ##-###-##
```

(#.##=Version number of the MU100R program ROM)

After displaying the version message shown above, the following display will appear.

```
01 RAM
```

The factory settings should be performed before any test when a circuit board or the backup battery were replaced. The factory settings are performed by turning the MU100R POWER switch on while pressing the [UTIL] and the [ENTER] buttons.

## B. PROCEEDING THROUGH THE TEST

When entering the test program, the following display will appear.

```
01 RAM
```

Use the [SELECT ▶] and [SELECT ◀] buttons to move through the various tests of the test program.
After having selected the test, press the [ENTER] button to start the test in succession from that number.
Pressing without selecting the test will start the test from "1. RAM" test.

### TEST SELECTION WHEN AN ERROR IS DETECTED

In each test, if an NG (No Good) error is detected, press the [EXIT] button. Then the MU100R will wait for the entry of a test number.

### 1. SRAM TEST

```
01 RAM
```

The Write/Read check for SRAM (IC 9 and IC 10) will be performed automatically on the following address.
IC9, IC10= h'200000 ~ h'20FFFF (16-bit Data Bus)

DISPLAY OF TEST RESULTS

OK

```
01 RAM
          ok
```

NG

```
01 RAM
         err
```

TEST END
After displaying the test result on the LCD, the test will be completed and proceed to the next test. If an error is detected during the test, refer to section B, "PROCEEDING TROUGH THE TEST". All SRAM data is preserved.

## 2. BATTERY TEST

```
02 BATTERY
```

This test checks that the voltage of the battery is greater than 2.9 V and less than 3.4 V.

DISPLAY OF TEST RESULT
OK

```
02 BATTERY
              ok
```

NG

```
02 BATTERY
             err
```

TEST END
After displaying the test result on the LCD, the test will be completed and proceed to the next test. If an error is detected during the test, refer to section B, "PROCEEDING TROUGH THE TEST".

## 3. LCD-ALL DOTS "ON" TEST

Check that all dots of the LCD change to black.
After checking the back light, press the [SELECT] button to control the LCD contrast in eight (8) steps.

TEST END
Press the [ENTER] button. Then the MU100R will proceed to enter the following test.
If the [EXIT] button is pressed, the MU100R will wait for the entry of the test number.

## 4. SWITCH & LED TEST

```
04 SWITCH & LED
[PLAY]
```

Press the panel switches consecutively from the [PLAY] button to the [VALUE+] button, according to the order indicated by the LCD. At this time, check that the LED of the testing switch is lighted up.

```
04 SWITCH & LED
[ENTER]
```

(e.g. when checking the [ENTER] switch)

The switch & LED test proceeds in the order as below.
[PLAY] → [UTIL] → [MODE] → [EDIT] → [EFFECT] → [EQ] → [MUTE/SOLO] → [ENTER] → [EXIT] → [PART-] → [SELECT-] → [VALUE-] → [PART+] → [SELECT+] → [VALUE+]

If the switch is OK, a beep will sound and the test will proceed to the next switch. If the wrong switch is pressed, the program does not proceed and no sound will heard.

DISPLAY OF TEST RESULTS
OK

```
04 SW & LED
              OK
```

NAG no appearing

TEST END
When the button [VALUE] is pressed, if the test is OK, the test will be completed and proceed to the next test.
If an error is detected during the test, turn the POWER off.

## 5. DIAL TEST

```
05 DIAL
Right 0-10=00
```

This test checks that the dial function works properly.
Press the [enter] button. Then the LCD will indicate "RIGHT 0-10=00". Rotate the dial clockwise until LCD indicates the number "10". Then the LCD will indicate "LEFT 0-10=00".

```
05 DIAL
Left  0-10=00
```

Rotate the dial counterclockwise until the LCD indicates the number "10".

DISPLAY OF TEST RESULTS
OK

```
05 DIAL
              ok
```

NG

```
05 DIAL
             err
```

TEST END
If the test is OK, "OK" will be displayed on the LCD and the test will be completed and proceed to the next test. If an error is detected during the test, refer to section B, "PROCEEDING TROUGH THE TEST".

## 6. MIDI 1 TEST

After connecting the [MIDI IN A] to the [MIDI OUT] and the [MIDI THRU] to the [MIDI IN B] via MIDI cables, execute the test. The [HOST SELECT] switch must be set at the [MIDI] during the test.

```
06 MIDI 1
```

DISPLAY OF TEST RESULTS
OK

```
06 MIDI 1
              ok
```

NG

```
06  MIDI 1
              err
```

TEST END
If the test is OK, "OK" will be displayed on the LCD and the test will be completed and proceed to the next test. If an error is detected during the test, refer to section B, "PROCEEDING TROUGH THE TEST".

## 7. MIDI 2 TEST

After connecting the [MIDI IN A] to the [MIDI OUT] and the [MIDI THRU] to the [MIDI IN B] via MIDI cables, execute the test. The [HOST SELECT] switch must be set at the [MIDI] during the test.

```
07  MIDI 2
```

DISPLAY OF TEST RESULTS
OK

```
07  MIDI 2
              ok
```

NG

```
07  MIDI 2
              err
```

TEST END
If the test is OK, "OK" will be displayed on the LCD and the test will be completed and proceed to the next test. If an error is detected during the test, refer to section B, "PROCEEDING TROUGH THE TEST".

## 8. HOST SELECT TEST

```
08  HOST  SELECT
Mac  ZZ--YY=XX
```

(where ZZ : minimum value, YY : maximum value, XX : current value)

Change the [HOST SELECT] switch from [Mac] to [MIDI], according to the order indicated by the LCD.

```
08  HOST  SELECT
PC2  ZZ--YY=XX
```

(when requiring to select the [PC2])

If an unexpected code is received, the system will not proceed to the next step.
Check that "OK" is displayed at each position of the HOST SELECT switch.

| Decision value | | |
|---|---|---|
| | MIDI: | 0 V～0.6 V |
| | PC2: | 1.25 V～2.1 V |
| | PC1: | 2.8 V～3.7 V |
| | MAC: | 4.7 V～5 V |

DISPLAY OF TEST RESULTS
OK

```
08  HOST  SELECT
              ok
```

TEST END
When the HOST SELECT switch is set at [MIDI], if the test is OK, the test will be completed and proceed to the next test.
During the test, if the [EXIT] button is pressed, the MU100R will wait for the entry of the test number.
If NG is detected during the test, refer to section B, "PROCEEDING TROUGH THE TEST".

## 9. TO HOST TX/RX TEST

```
09  TO  HOST
```

This test is utilized by the factory and it is not intended for field service use.

DISPLAY OF TEST RESULT
OK

```
09  TO HOST
              ok
```

NG

```
09  TO HOST
              err
```

TEST END
When this test is initiated without a jig for checking, an error will occur. If an error is detected during the test, refer to section B, "PROCEEDING TROUGH THE TEST".

## 10. WAVE ROM TEST

```
10  WAVE ROM
```

The Read/Verify check for the four WAVE Rooms via the SWP20-LSI will be performed automatically.

DISPLAY OF TEST RESULTS
OK

```
10  WAVE ROM
              ok
```

NG

```
10  WAVE ROM
              err
```

TEST END
If the test is OK, "OK" will be displayed on the LCD and the test will be completed and proceed to the next test. If an error is detected during the test, refer to section B, "PROCEEDING TROUGH THE TEST".

## 11. 1 kHz SOUND OUTPUT (L) TEST

```
11  OUTPUT  L  1 kHz
```

Check that the correct signal is output from the OUTPUT (L) and the PHONES (L) jacks.

Insert the appropriate phone plug into the OUTPUT(L, R), the PHONES and the INDIV.OUTPUT (1,2) jacks and check the output. If necessary, verify the frequency, output waveform, output level, and THD of the OUTPUT (L,R) and the PHONES output using a frequency counter, oscilloscope, AC voltmeter(with 12.47 kHz filter) and distortion meter. If a plug is inserted to the A/D INPUT, it must be pulled out. The VOLUME control must be set at maximum for this check.

ITEMS TO BE CHECKED
OUTPUT (L) : 1 kHz ±3 Hz, sin wave, +2.0 dBm±2 dB (10 k Ω load), distortion 0.25 % or less
OUTPUT (R) : less than -80 dBm
PHONES (L) : 1 kHz ±3 Hz sin wave, -4.5 dBm±2 dB (33 Ω load), distortion 0.5 % or less
PHONES (R) : less than -65 dBm
INDIV.OUTPUT1: less than -80 dBm
INDIV.OUTPUT2: less than -80 dBm

If the plug connected to the OUTPUT (R) is pulled out:
OUTPUT (L) : -3.0 dBm±2 dB

TEST END
Press the [ENTER] button. Then the MU100R will automatically proceed to the next test.
If the [EXIT] button is pressed, the MU100R will wait for the entry of the test number.

## 12. 1 kHz SOUND OUTPUT (R) TEST

```
12  OUTPUT  R  1 kHz
```

Check that the current signal is output from the OUTPUT (R) and the PHONES (R) jacks.
Insert the appropriate phone plug into the OUTPUT (L, R), the PHONES and the INDIV.OUTPUT (1,2) jacks and check the output. If necessary, verify the frequency, output waveform, output level, and THD of the OUTPUT (L,R) and the PHONES output using a frequency counter, oscilloscope, AC voltmeter(with 12.47 kHz filter) and distortion meter. If a plug is inserted to the A/D INPUT, it must be pulled out. The VOLUME control must be set at maximum for this check.

ITEMS TO BE CHECKED
OUTPUT (L) : less than -80 dBm
OUTPUT (R) : 1 kHz ±3 Hz, sin wave, +2.0 dBm±2 dB (10 k Ω load), distortion 0.25 % or less
PHONES (L) : less than -65 dBm
PHONES (R) : 1 kHz ±3 Hz sin wave, -4.5 dBm±2 dB (33 Ω load), distortion 0.5 % or less
INDIV.OUTPUT1: less than -80 dBm
INDIV.OUTPUT2: less than -80 dBm

TEST END
Press the [ENTER] button. Then the MU100R will automatically proceed to the next test.
If the [EXIT] button is pressed, the MU100R will wait for the entry of the test number.

## 13. INDIV.1 1kHz SOUND OUTPUT TEST

```
13  INDIVOUT1 1 kHz
```

Check that the correct signal is output from INDIV.OUTPUT1 jack.
Insert the appropriate phone plug into the INDIV.OUTPUT (1,2) and the OUTPUT (L,R) jacks and check the output. If necessary, verify the frequency, output waveform, output level, and THD of the INDIV.OUTPUT1 output using a frequency counter, oscilloscope, AC voltmeter(with 12.47 kHz filter) and distortion meter. If a plug is inserted to the A/D INPUT, it must be pulled out.

ITEMS TO BE CHECKED
INDIV.OUTPUT1:1 kHz ±3 Hz, sine wave, +2.0 dBm±2 dB (10 k Ω load), distortion 0.25 % or less)
INDIV.OUTPUT2:less than -80 dBm
OUTPUT (L): less than -80 dBm
OUTPUT (R): less than -80 dBm

TEST END
Press the [ENTER] button. Then the MU100R will automatically proceed to the next test.
If the [EXIT] button is pressed, the MU100R will wait for the entry of the test number.

## 14. INDIV.2 1kHz SOUND OUTPUT TEST

```
14  INDIVOUT2 1 kHz
```

Check that the correct signal is output from INDIV.OUTPUT2 jack.
Insert the appropriate phone plug into the INDIV.OUTPUT (1,2) and the OUTPUT (L,R) jacks and check the output. If necessary, verify the frequency, output waveform, output level, and THD of the INDIV.OUTPUT2 output using a frequency counter, oscilloscope, AC voltmeter(with 12.47 kHz filter) and distortion meter. If a plug is inserted to the A/D INPUT, it must be pulled out.

ITEMS TO BE CHECKED
INDIV.OUTPUT1:1 kHz ±3 Hz, sine wave, +2.0 dBm±2 dB (10 k Ω load), distortion 0.25 % or less)
INDIV.OUTPUT2:less than -80 dBm
OUTPUT (L): less than -80 dBm
OUTPUT (R): less than -80 dBm

TEST END
Press the [ENTER] button. Then the MU100R will automatically proceed to the next test.
If the [EXIT] button is pressed, the MU100R will wait for the entry of the test number.

## 15. INPUT HIGH TEST

```
15 INPUT HIGH
```

Apply a signal to [A/D INPUT], and check that the signal obtained at the [OUTPUT] is controlled in gain with the A/D INPUT.
Check that the level meters on the LCD light up when the provided signal is applied to [INPUT].
Insert the appropriate phone plug into the OUTPUT (L, R) and the PHONES jacks and check the output. If necessary, verify the frequency, output waveform, output level, and THD of the OUTPUT (L,R) and the PHONES output using a frequency counter, oscilloscope, AC voltmeter(with 12.47 kHz filter) and distortion meter. The VOLUME control must be set at maximum for this check.

ITEMS TO BE CHECKED
Listed below are the specifications and conditions of the OUTPUT(L,R) outputs during this test.
When a sine wave signal of -36.0 dBm, 1 kHz is applied to A/D INPUT (L), and A/D INPUT is set at maximum, and A/D INPUT (R) is connected to the ground:
OUTPUT (L) : +5 dBm ± 2 dB (10 k Ω load), distortion 0.5 % or less
OUTPUT (R) : less than -48 dBm

When a sine wave signal of -36.0 dBm, 1 kHz is applied to A/D INPUT (R), and A/D INPUT is set at maximum, and A/D INPUT (L) is connected to the ground:
OUTPUT (L) : less than -48 dBm
OUTPUT (R) : +5 dBm ± 2 dB (10 k Ω load), distortion 0.5% or less

When a sine wave signal of -36.0 dBm, 1 kHz is applied to A/D INPUT (L), and A/D INPUT is set at minimum, and A/D INPUT (R) is connected to the ground:
OUTPUT (L) : less than -66 dBm

When a sine wave signal of -36.0 dBm, 1 kHz is applied to A/D INPUT (R), and A/D INPUT is set at minimum, and A/D INPUT (L) is connected to the ground:
OUTPUT (R) : less than -66 dBm

Check that the level meters on the LCD will light up, when the sine wave of -29.0 dBm±2 dB, 1 kHz is applied to the A/D INPUT (L).

TEST END
Press the [ENTER] button. Then the MU100R will automatically proceed to the next test.
If the [EXIT] button is pressed, the MU100R will wait for the entry of the test number.

## 16. INPUT LOW TEST

```
16 INPUT LOW
```

Apply a signal to [A/D INPUT], and check that the signal obtained at the [OUTPUT] is controlled in gain with the A/D INPUT.
Check that the level meters on the LCD light up when the provided signal is applied to [INPUT].
Insert the appropriate phone plug into the OUTPUT (L, R) and the PHONES jacks and check the output. If necessary, verify the frequency, output waveform, output level, and THD of the OUTPUT (L,R) and the PHONES output using a frequency counter, oscilloscope, AC voltmeter(with 12.47 kHz filter) and distortion meter. The VOLUME control must be set at maximum for this check.

ITEMS TO BE CHECKED
Listed below are the specifications and conditions of the OUTPUT(L,R) outputs during this test.
When a sine wave signal of -11.5 dBm, 1 kHz is applied to A/D INPUT (L), and A/D INPUT is set at maximum, and A/D INPUT (R) is connected to the ground:
OUTPUT (L) : +5 dBm ± 2 dB (10 k Ω load), distortion 0.5 % or less
OUTPUT (R) : less than -60 dBm

When a sine wave signal of -11.5 dBm, 1 kHz is applied to A/D INPUT (R), and A/D INPUT is set at maximum, and A/D INPUT (L) is connected to the ground:
OUTPUT (L) : less than -60 dBm
OUTPUT (R) : +5.0 dBm ± 2 dB (10 k Ω load), distortion 0.5 % or less

When a sine wave signal of -11.5 dBm, 1 kHz is applied to A/D INPUT (L), and A/D INPUT is set at minimum, and A/D INPUT (R) is connected to the ground:
OUTPUT (L) : less than -65 dBm

When a sine wave signal of -11.5 dBm, 1 kHz is applied to A/D INPUT (R), and A/D INPUT is set at minimum, and A/D INPUT (L) is connected to the ground:
OUTPUT(R) : less than -65 dBm

Check that the level meters on the LCD will light up, when the sine wave of -6.0 dBm±2 dB, 1 kHz is applied to the A/D INPUT (R).

TEST END
Press the [ENTER] button. Then the MU100R will automatically proceed to the next test.
If the [EXIT] button is pressed, the MU100R will wait for the entry of the test number.

## 17. MEG と DRAM

```
17 MEG&DRAM
```

Check that the correct signal is output from OUTPUT (L) jack.
Insert the appropriate phone plug into the OUTPUT (L) jack and check the output.

If necessary, verify the frequency, output waveform, output level, and THD of the OUTPUT (L,R) and the PHONES output using a frequency counter, oscilloscope, AC voltmeter(with 12.47 kHz filter) and distortion meter. The VOLUME control must be set at maximum for this check.

ITEMS TO BE CHECKED
OUTPUT(L) : 1 kHz ±3.0 Hz, sine wave, +2 dBm±2 dB (10 k Ω load), distortion 0.25 % or less

TEST END
Press the [ENTER] button. Then the MU100R will automatically proceed to the next test.
If the [EXIT] button is pressed, the MU100R will wait for the entry of the test number.

### 18. 64 SOUND OUTPUT TEST

```
18  64ch  OUT
```

Check that the correct sine wave signals from channel 1 to channel 32 are output from the OUTPUT (L) and channel 33 through channel 64 are output from the OUTPUT (R).

If necessary, verify the output waveform using an oscilloscope (L channel: 1 kHz, R channel: 2 kHz).
The VOLUME control must be set at maximum for this check. While sounding, the LCD will display the following message.

```
18  64ch  OUT
Lch=xx    Rch=xx
```

(Where xx: currently sounded channel)

TEST END
Press the [ENTER] button. Then the MU100R will automatically proceed to the next test.
If the [EXIT] button is pressed, the MU100R will wait for the entry of the test number.

### 19. FACTORY SETTINGS

```
19  FACTORY SET
```

This test is used to initialize the data to the factory settings. If the [ENTER] button is pressed, the factory preset data will be restored. Then the MU100R will exit the test program mode and enter to play mode.
If the [EXIT] button is pressed, they will not be restored.

### 20. EXIT

```
20  EXIT
```

When the [ENTER] button is pressed, the MU100R will exit the test program mode and enter to the play mode.
To remain in the test program, press the [EXIT] button. Then the MU100R will wait for the entry of the test number.
Check that the noise levels are as follows, after the MU100R has quit the test program.

OUTPUT (L) : -88 dBm 以下
OUTPUT (R) : -88 dBm 以下
PHONES (L) : -88 dBm 以下
PHONES (R) : -88 dBm 以下

### 21. PB1 NAME TEST

```
21  PB1 NAME
```

After transmitting the request of the circuit board name and version, the MU100R receives the data through the MU-PB wires and the CN1 connector, and displays it on the LCD. Check the circuit board name and version on the LCD.

DISPLAY OF TEST RESULTS
OK

```
21  PB1 NAME
PLG100-VL       VX.XX
```

(X.XX: version number)

NG

```
21  PB1 NAME
                  err
```

(When not receiving the data from Plug-in Board)

TEST END
Press the [ENTER] button. Then the MU100R will automatically proceed to the next test.
If the [EXIT] button is pressed, the MU100R will wait for the entry of the test number.

### 22. PB1 RAM TEST

```
22  PB1 RAM
```

Check that the circuit board RAM, which is connected to connector CN1, functions correctly.

DISPLAY OF TEST RESULTS
OK

```
22  PB1 RAM
                  ok
```

NG

```
22  PB1 RAM
                  err
```

TEST END
If the test is OK, "OK" will be displayed on the LCD and the test will be completed and proceed to the next test. If an error is detected during the test, refer to section B, "PROCEEDING TROUGH THE TEST".

### 23. PB1 MIDI IN TEST

```
23  PB1 MIDI IN
```

Check that the MIDI IN, which is connected to the connector CN1, functions correctly.

After connecting the MIDI IN A jack to the MIDI OUT jack via MIDI, execute the test. At this time the HOST SELECT switch should be set at MIDI.

DISPLAY OF TEST RESULTS

OK
```
23  PB1 MIDI IN
                ok
```

NG
```
23  PB1 MIDI IN
               err
```

TEST END
If the test is OK, "OK" will be displayed on the LCD and the test will be completed and proceed to the next test. If an error is detected during the test, refer to section B, "PROCEEDING TROUGH THE TEST".

### 24. PB1 MEL

```
24  PB1 MEL
```

Check that the CN1-MEL IN/OUT functions correctly and the correct signal is output from the OUTPUT (L,R).

A signal is input from the AD input, goes through the DM circuit board and output from the CN1-MEL OUT. The signal travels from the CN1-MEL OUT to the circuit board connected to the CN1 connector, and the tone generator of the circuit board translates the signal into a 1 kHz sine wave. This sine wave travels through the MEL OUT and CN1-MEL IN, then is output as sound. If the effect circuit board is connected to the CN1 connector, the signal is not translated and the same signal as it received is returned to the DM circuit board through the MEL OUT and CN1-MEL IN, then is output as sound.

Insert the appropriate phone plug into the OUTPUT(L,R) and check the output.

The VOLUME control must be set at maximum for this test.

ITEMS TO BE CHECKED
OUTPUT(L):1 kHz ±3 Hz, 4.0 dBm ±2 dBm (VH)
1 kHz ±3 Hz, 3.2 dBm ±2 dBm (VL)
OUTPUT(R):1 kHz ±3 Hz, 4.0 dBm ±2 dBm (VH)
1 kHz ±3 Hz, 3.2 dBm ±2 dBm (VL)

TEST END
Press the [ENTER] button. Then the MU100R will automatically proceed to the next test.
If the [EXIT] button is pressed, the MU100R will wait for the entry of the test number.

### 25. PB2 NAME

```
25  PB2 NAME
```

After transmitting the request of the circuit board name and version, the MU100R receives the data through the MU-PB wires and the CN1 connector, and displays it on the LCD. Check the circuit board name and version on the LCD.

DISPLAY OF TEST RESULTS

OK
```
25  PB2 NAME
PLG100-VL       VX.XX
```
(X.XX: version number)

NG
```
25  PB2 NAME
               err
```
(When not receiving the data from Plug-in Board)

TEST END
Press the [ENTER] button. Then the MU100R will automatically proceed to the next test.
If the [EXIT] button is pressed, the MU100R will wait for the entry of the test number.

### 26. PB2 RAM

```
26  PB2 RAM
```

Check that the circuit board RAM which is connected to connector CN2 functions correctly.

DISPLAY OF TEST RESULTS

OK
```
26  PB2 RAM
                ok
```

NG
```
26  PB2 RAM
               err
```

TEST END
If the test is OK, "OK" will be displayed on the LCD and the test will be completed and proceed to the next test. If an error is detected during the test, refer to section B, "PROCEEDING TROUGH THE TEST".

### 27. PB2 MIDI IN

```
27  PB2 MIDI IN
```

Check that the MIDI IN, which is connected to the connector CN2, functions correctly.

After connecting the MIDI IN A jack to the MIDI OUT jack via MIDI, execute the test. At this time the HOST SELECT switch should be set at MIDI.

DISPLAY OF TEST RESULTS

OK

```
27  PB2 MIDI IN
                ok
```

NG

```
27  PB2 MIDI IN
                err
```

TEST END

If the test is OK, "OK" will be displayed on the LCD and the test will be completed and proceed to the next test. If an error is detected during the test, refer to section B, "PROCEEDING TROUGH THE TEST".

### 28. PB2 MEL

```
28  PB2 MEL
```

Check that the CN2-MEL IN/OUT functions correctly and the correct signal is output from the OUTPUT (L,R).

A signal is input from the AD input, goes through the DM circuit board and output from the CN2-MEL OUT. The signal travels from the CN2-MEL OUT to the circuit board connected to the CN2 connector, and the tone generator of the circuit board translates the signal into a 1 kHz sine wave. This sine wave travels through the MEL OUT and CN2-MEL IN, then is output as sound. If the effect circuit board is connected to the CN2 connector, the signal is not translated and the same signal as it received is returned to the DM circuit board through the MEL OUT and CN2-MEL IN, then is output as sound.

Insert the appropriate phone plug into the OUTPUT(L,R) and check the output.

The VOLUME control must be set at maximum for this test.

ITEMS TO BE CHECKED

OUTPUT(L):1 kHz ±3 Hz, 4.0 dBm ±2 dBm (VH)
1 kHz ±3 Hz, 3.2 dBm ±2 dBm (VL)
OUTPUT(R):1 kHz ±3 Hz, 4.0 dBm ±2 dBm (VH)
1 kHz ±3 Hz, 3.2 dBm ±2 dBm (VL)

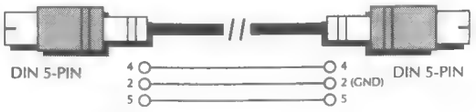
TEST END

Press the [ENTER] button. Then the MU100R will automatically proceed to the next test.
If the [EXIT] button is pressed, the MU100R will wait for the entry of the test number.

# ■ MIDI/COMPUTER CONNECTING CABLES

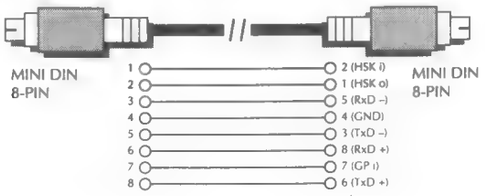
## MIDI

Standard MIDI cable. Maximum length 15 meters.



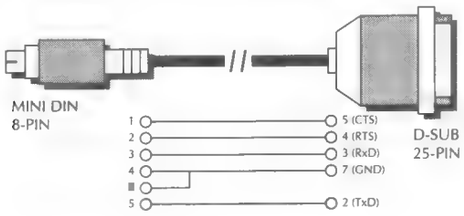

## Mac

Apple Macintosh Peripheral cable (M0197). Maximum length 2 meters.



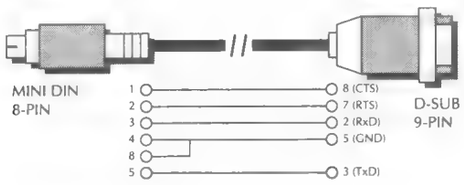

## PC-1

8-pin MINI DIN to D-SUB 25-pin cable. If your PC-1 type computer has a 9-pin serial port, use the PC-2 type cable. Maximum length 1.8 meters.




## PC-2

8-pin MINI DIN to D-SUB 9-pin cable. Maximum length 1.8 meters.



# ERROR MESSAGES

### Battery Low!

The battery voltage (for internal memory backup) may be too low. Bring the unit to your local Yamaha dealer or any other authorized Yamaha service personnel.

### Illegal Data!

A data error resulted during reception of MIDI messages. Try transmitting the data again, or turn the MU100R off and back on again.

### MIDI Buffer Full!

Too much MIDI data is being received by the MU100R at one time. Reduce the amount of data being sent to the MU100R.

### HOST is OffLine!

This message appears when the host computer is not turned on, the connecting cable is not properly connected, or the sequencing software is not active.

### SysEx Adrs ERROR!

The data of the received System Exclusive message is incorrect. Check the address of the message and try transmitting again.

### SysEx Data ERROR!

The data of the received System Exclusive message is incorrect. Check the data of the message (as to whether it requires an MSB or LSB header) and try transmitting again.

### SysEx Size ERROR!

The data of the received System Exclusive message is incorrect. Check the size of the message and try transmitting again.

### Check Sum ERROR!

The checksum of the received System Exclusive message is incorrect. Check the checksum of the message and try transmitting again.

### This Parameter isn't Excl Data

The selected parameter has no System Exclusive value and cannot be displayed with the Show Exclusive function.

### No Parameter

The selected parameter for use with the Show Exclusive function does not exist as a valid parameter.

### Rcv CH is OFF!

The selected parameter for use with the Show Exclusive function cannot be converted to a MIDI message value since the Receive Channel for the Part is off. Set the Receive Channel to an appropriate value.

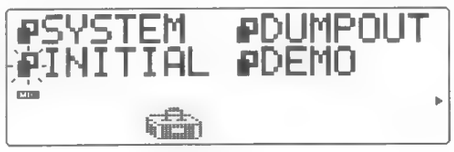
# INITIALIZE

The Initialize functions allow you to restore the factory settings of the MU100R.

*NOTE*
*Since the Initialize functions replace existing data, you should save any and all important settings to a MIDI data storage device before using these functions.*

**Operation**

1 Press the **UTIL** button and select "**INITIAL**," then press the **ENTER** button.



2 From the Initialize menu, select the type of data to be initialized: Factory Settings (FactSet), selected Sound Module mode (XGInit, GM Init, C/MInit, PFMInit) or Drum (DrumInit) Then, press the **ENTER** button to call up the selected data dump.

*Factory Settings (FactSet)*

This restores the original factory settings of the MU90R.

*Selected Sound Module Mode:*

**Extended General MIDI (XGInit)**

**General MIDI (GM Init)**

**Computer Music (C/MInit)**

**Performance (PFMInit)**

One of the four parameters above will be available, depending on the currently selected Sound Module mode: **XG**, **TG300B**, **C/M** or **PFM**. Initializing this parameter restores the original settings for the selected mode.

*NOTE*
- *For the **PFMInit** setting, only the currently selected Performance will be initialized.*
- *For **XGInit** and **GM Init**, the initialized settings are the same as when the MU90R is reset upon receiving an **XG System On** or **GM System On** message.*

*Drum (DrumInit)*

**Range: DrumS1 — DrumS4**
This restores the original drum settings for the selected Drum Setup S1 — S4. (Use the **VALUE** ⊖/⊕ buttons or data dial to select the desired Drum Setup.)

*NOTE*
*This parameter is not available when the MU90R is set to Performance mode.*

3 From the "Are you sure?" prompt, press the **ENTER** button to execute the operation, or press the **EXIT** button to cancel it and return to the previous display.

An "Executing..." message appears in the display during the operation. When the operation is completed, the MU90R returns to the Initialize menu.

# ■ テストプログラム

**準備**

測定条件: 本体をテストする場合は、次の測定器・治具が必要です。

測定器: 低周波発振器、アナログ波形測定機、キーボードアンプなど

治具: MIDI ケーブル、HOST チェック治具など

| テスト番号 | 表題 | 判定条件など |
|---|---|---|
| A | テストエントリー | |
| B | テストの進め方および NG のときのテストの進め方 | |
| 1 | SRAM | SRAM READ/WRITE |
| 2 | BATTERY | CPU の A/D チェック |
| 3 | LCD ドットとコントラスト | 全白、全黒 の反転 |
| 4 | スイッチと LED | スイッチ ON/OFF、LED ON/OFF |
| 5 | DIAL | ダイアルのチェック |
| 6 | MIDI 1 | MIDI IN A と MIDI OUT を接続します |
| 7 | MIDI 2 | MIDI IN B と MIDI OUT を接続します |
| 8 | HOST SELECT | HOST SELECT スイッチを切り替えます |
| 9 | TO HOST TX/RX | HOST チェック治具を接続します |
| 10 | WAVE ROM | WAVE ROM READ |
| 11 | 1 kHz OUTPUT(L) 発音 | 計測 |
| 12 | 1 kHz OUTPUT(R) 発音 | 計測 |
| 13 | 1 kHz Indiv.OUT1 発音 | 計測 |
| 14 | 1 kHz Indiv.OUT2 発音 | 計測 |
| 15 | INPUT HIGH | 計測 |
| 16 | INPUT LOW | 計測 |
| 17 | MEG&DRAM | 計測 |
| 18 | 64 音発音 | 聴感 |
| 19 | ファクトリーセット | |
| 20 | EXIT | |
| 21 | PB1 NAME | Slot1 の PB テスト |
| 22 | PB1 RAM | Slot1 の PB テスト |
| 23 | PB1 MIDI IN | Slot1 の PB テスト |
| 24 | PB1 MEL | Slot1 の PB テスト |
| 25 | PB2 NAME | Slot2 の PB テスト |
| 26 | PB2 RAM | Slot2 の PB テスト |
| 27 | PB2 MIDI IN | Slot2 の PB テスト |
| 28 | PB2 MEL | Slot2 の PB テスト |

21～24 のテストを行う場合は、電源を立ち上げる前に MU100R の CN1 に PB を接続して下さい。

25～28 のテストを行う場合は、電源を立ち上げる前に MU100R の CN2 に PB を接続して下さい。

以下のテストは MU100R 本体の検査としては、行う必要はありません。

22 PB1 RAM
26 PB2 RAM

### A. テストエントリー

[PLAY]ボタンと[MUTE/SOLO]ボタンを押しながら、MU100 の電源を ON します。

```
MU100 TEST MODE
Ver#.## ##-###-##
```

しばらくすると、以下の表示がされます。

```
01  RAM
```

Ver#.##は、製品プログラム ROM のバージョン番号です。

**テストを進めるときの注意事項**

組み立て上がり直後、またはバッテリー交換直後からテストを始めるときは、[UTIL]ボタンと[ENTER]ボタンを押しながら電源を入れることによってファクトリーセットを行い、その後でテストを実行して下さい。

### B. テストの進め方

テストにエントリーすると、次の画面が表示されます。

```
01 RAM
```

SELECT キーによりテスト番号を選択し、[ENTER]を押すと、押されたテスト番号から順に自動的にテストが実行されます。
何も選択せずに[ENTER]を押すと、"01 RAM"より、テストナンバー順に自動的にテストが実行されます。
エラーが発生した場合は、エラー表示を行ってテストは止まります。

**NG と判断したときのテストの進め方**

各テストにおいて NG と判断した場合は、[EXIT]を押すと、テスト番号の選択画面となります。
ただし、"04 SW & LED"のテスト中にエラーが発生した場合は、電源を切ってテストを終了して下さい。

### 1. SRAM

```
01  RAM
```

次の SRAM 領域に、データ "A5"をライト／リードしてベリファイチェックを行います。
IC9, IC10= h'200000 ～ h'20FFFF （16-bit Data Bus）

**判定結果の表示**

OK

```
01  RAM
                ok
```

NG

```
01  RAM
               err
```

**テストの終了方法**
OKのときは、OKが表示されて次のテストに進みます。
テスト途中で、NG と判断した場合の処理方法は、"B. テストの進め方"を参照して下さい。
また、SRAM のすべてのデータは保存されます。

## 2. BATTERY

```
02 BATTERY
```

バッテリー電圧が、CPU(IC 11)の A/D によりチェックされた内容が、2.9 V～3.4 V の範囲にあることを確認します。

**判定結果の表示**
OK
```
02 BATTERY
              ok
```

NG
```
02 BATTERY
             err
```

**テストの終了方法**
OKのときは、OKが表示されて次のテストに進みます。
テスト途中で、NG と判断した場合の処理方法は、"B. テストの進め方"を参照して下さい。

## 3. LCD ドットブリンクとコントラスト

LCD の全ドットが、白から黒に反転することを目で見て確認します。
また、バックライトが正しく点灯していることを確認したら、[SELECT]キーを押して、コントラストが8段階に切り替わることを確認します。

**テストの終了方法**
[ENTER]を押すとテストは終了し、次のテストへ進みます。
[EXIT]を押すとテストは終了し、テスト番号の選択画面となります。

## 4. スイッチと LED

```
04 SWITCH & LED
[PLAY]
```

[PLAY]から[VALUE+]までのパネルスイッチを以下のような LCD の表示に従って ON/OFF します。
このとき、LCD に表示されているスイッチの LED が点灯していることを確認した後、スイッチを押してスイッチが正常に動作することを確認します。

```
04 SWITCH & LED
[ENTER]
```
([ENTER]スイッチのチェックの場合)

スイッチ チェックの順序を以下に示します。
[PLAY]→[UTIL]→[MODE]→[EDIT]→[EFFECT]→[EQ]→[MUTE/SOLO]→[ENTER]→[EXIT]→[PART-]→[SELECT-]→[VALUE-]→[PART+]→[SELECT+]→[VALUE+]

LCD の表示に従ってスイッチを ON/OFF したとき、スイッチが正常の場合"ポーッ"と発音して次のスイッチにテストが進みます。
NG の場合、LCD に指示されたスイッチを押しても、次のスイッチのテストに進みません。

**判定結果の表示**
OK
```
04 SW & LED
              ok
```

NG　　なし

**テストの終了方法**
[VALUE+]までのチェックすると、次のテストに進みます。
テスト途中で NG と判断した場合は、一度電源を切ってテストをやり直して下さい。

## 5. DIAL

```
05 DIAL
Right 0-10=00
```

ダイアルが正しく動作することを確認します。LCD の表示に従って値が 10 になるまでダイアルをゆっくり右に回します。値が 10 になると次の表示になります。

```
05 DIAL
Left  0-10=00
```

LCD の表示に従って値が 10 になるまでダイアルをゆっくり右に回します。

**判定結果の表示**
OK
```
05 DIAL
              ok
```

NG
```
05 DIAL
             err
```

**テストの終了方法**
OKのときは、OKが表示されて次のテストに進みます。
テスト途中で、NG と判断した場合の処理方法は、"B. テストの進め方"を参照して下さい。

## 6. MIDI 1

MIDI IN A 端子と MIDI OUT 端子、そして MIDI THRU 端子と MIDI IN B 端子を MIDI ケーブルで接続した後、テストを実行します。このとき、HOST SELECT は MIDI にセットしておきます。

```
06  MIDI 1
```

MIDI OUT 端子からテストパターン(AA 50 5F)を送って MIDI IN A 端子で受信した結果で判定します。

**判定結果の表示**

OK
```
06  MIDI 1
              ok
```

NG
```
06  MIDI 1
             err
```

**テストの終了方法**

OK のときは、OK が表示されて次のテストに進みます。
テスト途中で、NG と判断した場合の処理方法は、“B. テストの進め方”を参照して下さい。

### 7. MIDI 2

MIDI IN A 端子と MIDI OUT 端子、そして MIDI THRU 端子と MIDI IN B 端子を MIDI ケーブルで接続した後、テストを実行します。
このとき、HOST SELECT は MIDI にセットしておきます。

```
07  MIDI 2
```

MIDI OUT 端子からテストパターン(AA 50 5F)を送って MIDI IN A 端子で受信し、MIDI THRU 端子から出力されデータを MIDI IN B 端子で受信した結果で判定します。

**判定結果の表示**

OK
```
07  MIDI 2
              ok
```

NG
```
07  MIDI 2
             err
```

**テストの終了方法**

OK のときは、OK が表示されて次のテストに進みます。
テスト途中で、NG と判断した場合の処理方法は、“B. テストの進め方”を参照して下さい。

### 8. HOST SELECT

```
08  HOST  SELECT
Mac  ZZ--YY=XX
```

（ZZ = 下限値、YY = 上限値 、XX = 測定値）

LCD の表示に従って、[Mac]から[PC-1]→[PC-2]→[MIDI]の順に HOST SELECT スイッチを切り替え、スイッチが正しく働くことを確認します。

```
08  HOST  SELECT
PC2  ZZ--YY=XX
```

（*[PC2]に切り替え要求中）

正しい DATA が来るまでは無限ループとなります。
判定値　MIDI:　0 V～0.6 V
　　PC2:　1.25 V～2.1 V
　　PC1:　2.8 V～3.7 V
　　MAC:　4.7 V～5 V

LCD の表示に従ってスイッチを切り替えたとき、全て OK となることを確認します。

**判定結果の表示**

OK
```
08  HOST  SELECT
                ok
```

**テストの終了方法**

[MIDI]までチェックすると OK が表示され、テストは次に進みます。テストの途中で[EXIT]を押すと、テストを終了してテスト番号の選択画面となります。
テスト途中で、NG と判断した場合の処理方法は、“B. テストの進め方”を参照して下さい。

### 9. TO HOST TX/RX

```
09  TO  HOST
```

このテストは、工場出荷検査用のテストです。ここでは、実行しません。
このテストは、TO HOST IN/OUT の動作確認をテストパターン(AA 50 5F)により行います。

**判定結果の表示**

OK
```
09  TO HOST
              ok
```

NG
```
09  TO HOST
             err
```

**テストの終了方法**

テスト用の冶具なしでテストを実行すると、エラーが発生します。処理方法は、“B. テストの進め方”を参照して下さい。

### 10. WAVE ROM

```
10  WAVE ROM
```

SWP20 を介して 4 つの WAVE ROM のデータをリード／ベリファイします。

**判定結果の表示**

OK
```
10  WAVE ROM
              ok
```

NG

```
10  WAVE ROM
                  err
```

**テストの終了方法**
OKのときは、OKが表示されて次のテストに進みます。
テスト途中で、NGと判断した場合の処理方法は、“B.テストの進め方”を参照して下さい。

### 11. 1 kHz OUTPUT (L)発音

```
11  OUTPUT  L  1 kHz
```

OUTPUT(L)端子およびPHONES(L)端子より、正常な信号が出力されていることを確認します。
OUTPUT(L, R)端子、PHONES(L, R)端子、INDIV.OUTPUT(1,2)端子にプラグを差し込み、各出力の周波数、出力波形、出力レベルを観測・測定します。このとき、A/D INPUTには、プラグが差し込まれていないこと。
また、マスターボリュームはMAXとします。

**チェック項目**
OUTPUT(L)： 1 kHz ±3 Hz、SIN波、+2.0 dBm±2 dB (負荷10 kΩ)、歪率0.25 %以下
OUTPUT(R)： -80 dBm以下
PHONES(L)： 1 kHz ±3 Hz、SIN波、-4.5 dBm±2 dB (負荷33 Ω)、歪率0.5 %以下
PHONES(R)： -65 dBm以下
INDIV.OUTPUT1：-80 dBm以下
INDIV.OUTPUT2：-80 dBm以下

OUTPUT(R)のプラグを抜いたとき
OUTPUT(L)： -3.0 dBm±2 dB

**テストの終了方法**
[ENTER]を押すと、テストは次に進みます。
[EXIT]を押すと、テスト番号の選択画面となります。

### 12. 1 kHz OUTPUT (R)発音

```
12  OUTPUT  R  1 kHz
```

OUTPUT(R)端子およびPHONES(R)端子より、正常な信号が出力されていることを確認します。
OUTPUT(L, R)端子、PHONES(L, R)端子、INDIV.OUTPUT(1,2)端子にプラグを差し込み、各出力の周波数、出力波形、出力レベルを観測・測定します。このとき、A/D INPUTには、プラグが差し込まれていないこと。
また、マスターボリュームはMAXとします。

**チェック項目**
OUTPUT(L)： -80 dBm以下
OUTPUT(R)： 1 kHz ±3 Hz、SIN波、+2.0 dBm±2 dB (負荷10 kΩ)、歪率0.25 %以下
PHONES(L)： -65 dBm以下
PHONES(R)： 1 kHz ±3 Hz、SIN波、-4.5 dBm±2 dB (負荷33 Ω)、歪率0.5 %以下
INDIV.OUTPUT1：-80 dBm以下
INDIV.OUTPUT2：-80 dBm以下

**テストの終了方法**
[ENTER]を押すと、テストは次に進みます。
[EXIT]を押すと、テスト番号の選択画面となります。

### 13. 1kHz Indiv. OUT1 発音

```
13  INDIVOUT1 1 kHz
```

INDIV.OUTPUT1端子より、正常な信号が出力されていることを確認します。
INDIV.OUTPUT(1,2)端子とOUTPUT(L, R)端子にプラグを差し込み、各出力の周波数、出力波形、出力レベルを観測・測定します。

**チェック項目**
INDIV.OUTPUT1:1 kHz ±3 Hz、SIN波、+2.0 dBm±2 dB (負荷10 kΩ)、歪率0.25 %以下
INDIV.OUTPUT2:-80 dBm以下
OUTPUT L: -80 dBm以下
OUTPUT R: -80 dBm以下

**テストの終了方法**
[ENTER]を押すと、テストは次に進みます。
[EXIT]を押すと、テスト番号の選択画面となります。

### 14. 1kHz Indiv. OUT2 発音

```
14  INDIVOUT2 1 kHz
```

INDIV.OUTPUT2端子より、正常な信号が出力されていることを確認します。
INDIV.OUTPUT(1,2)端子とOUTPUT(L, R)端子にプラグを差し込み、各出力の周波数、出力波形、出力レベルを観測・測定します。

**チェック項目**
INDIV.OUTPUT1:-80 dBm以下
INDIV.OUTPUT2:1 kHz ±3 Hz、SIN波、+2.0 dBm±2 dB (負荷10 kΩ)、歪率0.25 %以下
OUTPUT L: -80 dBm以下
OUTPUT R: -80 dBm以下

**テストの終了方法**
[ENTER]を押すと、テストは次に進みます。
[EXIT]を押すと、テスト番号の選択画面となります。

### 15. INPUT HIGH

INPUT GAIN が HIGH のときに、A/D INPUT 端子に入力した信号が、INPUT VOLUME によりゲインが変化し、OUTPUT 端子より出力されることを確認します。また、規定のレベルの信号を A/D INPUT 端子に入力することにより、LCD のレベルメータが点灯することを確認します。
OUTPUT(L, R)端子と PHONES(L, R)端子共にプラグを差し込み、各出力の周波数、出力波形、出力レベルを観測・測定します。
このとき、マスターボリュームは MAX とします。

**チェック項目**
A/D INPUT(L)端子に-36.0 dBm、1 kHz の SIN 波を入力（A/D INPUT(R)端子はグラウンドに接続）し、INPUT VOLUME を MAX としたとき
OUTPUT(L)： +5 dBm±2 dB (負荷 10k Ω)、歪率 0.5 %以下
OUTPUT(R)： -48 dBm 以下

A/D INPUT(R)端子に-36.0 dBm、1 kHz の SIN 波を入力（A/D INPUT(L)端子はグラウンドに接続）し、INPUT VOLUME を MAX としたとき
OUTPUT(L)： -48 dBm 以下
OUTPUT(R)： +5 dBm±2 dB (負荷 10 k Ω)、歪率 0.5% 以下

A/D INPUT(L)端子に-36.0 dBm、1 kHz の SIN 波を入力（A/D INPUT(R)端子はグラウンドに接続）し、INPUT VOLUME を MIN としたとき
OUTPUT(L)： -66 dBm 以下

A/D INPUT(R)端子に-36.0 dBm、1 kHz の SIN 波を入力（A/D INPUT(L)端子はグラウンドに接続）し、INPUT VOLUME を MIN としたとき
OUTPUT(R)： -66 dBm 以下

INPUT VOLUME を MAX とし、A/D INPUT(L)端子に-29.0 dBm±2 dB、1 kHz の SIN 波を入力したとき、LCD のレベルメータが点灯することを確認します。

**テストの終了方法**
[ENTER]を押すと、テストは次に進みます。
[EXIT]を押すと、テスト番号の選択画面となります。

### 16. INPUT LOW

INPUT GAIN が LOW のときに、A/D INPUT 端子に入力した信号が、INPUT VOLUME によりゲインが変化し、OUTPUT 端子より出力されることを確認します。また、規定のレベルの信号を A/D INPUT 端子に入力することにより、LCD のレベルメータが点灯することを確認します。
OUTPUT(L, R)端子と PHONES(L, R)端子共にプラグを差し込み、各出力の周波数、出力波形、出力レベルを観測・測定します。
このとき、マスターボリュームは MAX とします。

**チェック項目**
A/D INPUT(L)端子に-11.5 dBm、1 kHz の SIN 波を入力（A/D INPUT(R)端子はグラウンドに接続）し、INPUT VOLUME を MAX としたとき
OUTPUT(L)： +5 dBm±2 dB (負荷 10k Ω)、歪率 0.5 %以下
OUTPUT(R)： -60 dBm 以下

A/D INPUT(R)端子に-11.5 dBm、1 kHz の SIN 波を入力（A/D INPUT(L)端子はグラウンドに接続）し、INPUT VOLUME を MAX としたとき
OUTPUT(L)： -60 dBm 以下
OUTPUT(R)： +5.0 dBm±2 dB (負荷 10 k Ω)、歪率 0.5% 以下

A/D INPUT(L)端子に-11.5 dBm、1 kHz の SIN 波を入力（A/D INPUT(R)端子はグラウンドに接続）し、INPUT VOLUME を MIN としたとき
OUTPUT(L)： -65 dBm 以下

A/D INPUT(R)端子に-11.5 dBm、1 kHz の SIN 波を入力（A/D INPUT(L)端子はグラウンドに接続）し、INPUT VOLUME を MIN としたとき
OUTPUT(R)： -65 dBm 以下

INPUT VOLUME を MAX とし、A/D INPUT(R)端子に-6.0 dBm±2 dB、1 kHz の SIN 波を入力したとき、LCD のレベルメータが全て点灯することを確認します。

**テストの終了方法**
[ENTER]を押すと、テストは次に進みます。
[EXIT]を押すと、テスト番号の選択画面となります。

### 17. MEG と DRAM

OUTPUT(L)端子から出力される信号の周波数、出力波形、出力レベルを観測・測定し、正常な信号が出力されていることを確認します。このとき、A/D INPUT には、プラグが差し込まれていないこと。
また、マスターボリュームは MAX とします。
なお、最低でも 2 秒以上は観測して下さい。

**チェック項目**
OUTPUT(L)： 1 kHz ±3.0 Hz、SIN 波、+2 dBm±2 dB (負荷 10 k Ω)、 歪率 0.25 %以下

**テストの終了方法**
[ENTER]を押すと、テストは次に進みます。
[EXIT]を押すと、テスト番号の選択画面となります。

### 18. 64 音発音

```
18  64ch  OUT
```

OUTPUT(L)端子からは、1 チャンネルから 32 チャンネルまでの信号が発音されます。また、OUTPUT(R)端子からは、33 チャンネルから 64 チャンネルまでの信号が発音されます。

発音時間は約 0.3 秒、間隔が約 0.1 秒で 32 回繰り返し発音されますので、聴感で 64 の発音チャンネルが正常に発音されていることを確認します。
また、出力波形が正常なサイン波であることを確認します。（L ch ＝ 1 kHz、Rch ＝ 2 kHz）
このとき、マスターボリュームは MAX とします。
テスト中、LCD には以下のように表示されます。

```
18  64ch  OUT
Lch=xx    Rch=xx
```

（xx：現在発音中のチャンネルナンバー）

**テストの終了方法**
[ENTER]を押すと、テストは次に進みます。
[EXIT]を押すと、テスト番号の選択画面となります。

### 19. ファクトリーセット

```
19  FACTORY SET
```

[ENTER]を押すと各データはファクトリーセットされて工場出荷データとなり、テストモードから抜けます。
[EXIT]を押すと、ファクトリーセットは実行されずEXITします。

### 20. EXIT

```
20  EXIT
```

[ENTER]を押すと、テストモードから抜けて、プレイモードになります。
[EXIT]を押すと、テスト番号の選択画面となります。

テストモードを抜けプレイモードになったらとき、ノイズレベルが次の条件を満たすことを確認して下さい。

OUTPUT(L)： -88 dBm 以下
OUTPUT(R)： -88 dBm 以下
PHONES(L)： -88 dBm 以下
PHONES(R： -88 dBm 以下

### 21. PB1 NAME

```
21  PB1 NAME
```

MU-PB 間通信用信号線を使い、MU から PB にボードネームとバージョンのリクエストを出し、PB からその情報を得て、LCD に表示します。CN1 の通信用信号線が正しく動作していることの確認、ボードネームとバージョンの確認を行います。
本テストを行う場合は、本体電源を入れる前に本体 CN1 に PB を接続しておいて下さい。

**判定結果の表示**

OK
```
21  PB1 NAME
PLG100-VL       VX.XX
```
（X.XX = バージョンナンバー）

NG
```
21  PB1 NAME
                  err
```
（PB から情報が返って来ない場合）

**テストの終了方法**
[ENTER]を押すと、テストは次に進みます。
[EXIT]を押すと、テスト番号の選択画面となります。

### 22. PB1 RAM

```
22  PB1 RAM
```

MU100 の CN1 に接続された PB の RAM チェックを行います。

本テストを行う場合は、本体電源を入れる前に本体 CN1 に PB を接続しておいて下さい。

**判定結果の表示**

OK
```
22  PB1 RAM
                  ok
```

NG
```
22  PB1 RAM
                  err
```

**テストの終了方法**
OK のときは、OK が表示されて次のテストに進みます。
テスト途中で、NG と判断した場合の処理方法は、“B. テストの進め方”を参照して下さい。

### 23. PB1 MIDI IN

```
23  PB1 MIDI IN
```

MU100 の CN1 に接続された PB の MIDI IN のチェックを行います。

MIDI IN A 端子と MIDI OUT 端子を MIDI ケーブルで接続した後、テストを実行します。このとき、HOST SELECT は MIDI にセットしておきます。

本テストを行う場合は、本体電源を入れる前に本体 CN1 に PB を接続しておいて下さい。

**判定結果の表示**

OK
```
23  PB1 MIDI IN
                ok
```

NG
```
23  PB1 MIDI IN
               err
```

**テストの終了方法**

OK のときは、OK が表示されて次のテストに進みます。
テスト途中で、NG と判断した場合の処理方法は、“B. テストの進め方”を参照して下さい。

### 24. PB1 MEL

```
24  PB1 MEL
```

OUTPUT(L,R)より正常な信号が出力されていること（下記3テスト）を確認します。
（内容）
MU100RのCN1-MEL OUT からAD INPUTに入力された信号を出力し、PBに発音を要求します。音源PBは1kHz Sin 波をMEL OUT から出力します。エフェクトPBは入力された信号をMEL OUTから出力します。MU100R は CN1-MEL IN に入力された Sin 波を OUTPUTから出力します。

1. MU100R本体のテスト
CN1のMEL IN/OUTが正しく動作していることを確認します。

2. 音源PBのテスト(PLG100-VL,SG)
音源部及び、MEL OUTが正しく動作していることを確認します。

3. エフェクトPBのテスト(PLG100-VH)
エフェクト部及び、MEL IN/OUTが正しく動作していることを確認します。

OUTOUT(L,R) にプラグを差し込み、各出力の周波数、出力波形、出力レベルを観測して下さい。

ボリュームはMAXとします。

本テストを行う場合は、本体電源を入れる前に本体 CN1 に PB を接続しておいて下さい。

**チェック項目**

OUTPUT(L):1 kHz ±3 Hz, 4.0dBm ±2 dBm (PLG100-VH)
1 kHz ±3 Hz, 3.2dBm ±2 dBm (PLG100-VL)
1 kHz ±3 Hz, 2.0dBm ±2 dBm (PLG100-VS)
OUTPUT(R):1 kHz ±3 Hz, 4.0dBm ±2 dBm (PLG100-VH)
1 kHz ±3 Hz, 3.2dBm ±2 dBm (PLG100-VL)
1 kHz ±3 Hz, 2.0dBm ±2 dBm (PLG100-VS)

[ENTER]を押すと、テストは次に進みます。
[EXIT]を押すと、テスト番号の選択画面となります。

**その他**

MU100R 本体のテストを行う場合は PLG100-VH を使用して下さい。

### 25. PB2 NAME

```
25  PB2 NAME
```

MU-PB 間通信用信号線を使い、MU から PB にボードネームとバージョンのリクエストを出し、PB からその情報を得て、LCD に表示します。CN2 の通信用信号線が正しく動作していることの確認、ボードネームとバージョンの確認を行います。
本テストを行う場合は、本体電源を入れる前に本体 CN2 に PB を接続しておいて下さい。

**判定結果の表示**

OK
```
25  PB2 NAME
PLG100-VL       VX.XX
```
（X.XX = バージョンナンバー）

NG
```
25  PB2 NAME
                err
```
（PB から情報が返って来ない場合）

**テストの終了方法**

[ENTER]を押すと、テストは次に進みます。
[EXIT]を押すと、テスト番号の選択画面となります。

### 26. PB2 RAM

```
26  PB2 RAM
```

MU100R の CN2 に接続された PB の RAM チェックを行います。

本テストを行う場合は、本体電源を入れる前に本体 CN2 に PB を接続しておいて下さい。

**判定結果の表示**

OK

```
26  PB2 RAM
                ok
```

NG

```
26  PB2 RAM
                err
```

**テストの終了方法**

OKのときは、OKが表示されて次のテストに進みます。
テスト途中で、NG と判断した場合の処理方法は、“B. テストの進め方”を参照して下さい。

### 27. PB2 MIDI IN

```
27  PB2 MIDI IN
```

MU100R の CN2 に接続された PB の MIDI IN のチェックを行います。

MIDI IN A端子と MIDI OUT端子を MIDI ケーブルで接続した後、テストを実行します。このとき、HOST SELECT は MIDI にセットしておきます。

本テストを行う場合は、本体電源を入れる前に本体CN2 に PB を接続しておいて下さい。

**判定結果の表示**

OK

```
27  PB2 MIDI IN
                ok
```

NG

```
27  PB2 MIDI IN
                err
```

**テストの終了方法**

OKのときは、OKが表示されて次のテストに進みます。
テスト途中で、NG と判断した場合の処理方法は、“B. テストの進め方”を参照して下さい。

### 28. PB2 MEL

```
28  PB2 MEL
```

OUTPUT(L,R)より正常な信号が出力されていること（下記3テスト）を確認します。
（内容）
MU100RのCN2-MEL OUT からAD INPUTに入力された信号を出力し、PBに発音を要求します。音源PBは1kHz Sin 波をMEL OUT から出力します。エフェクトPBは入力された信号をMEL OUTから出力します。MU100R は CN2-MEL IN に入力された Sin 波を OUTPUTから出力します。

1. MU100R本体のテスト
CN2のMEL IN/OUTが正しく動作していることを確認します。

2. 音源PBのテスト(PLG100-VL,SG)
音源部及び、MEL OUTが正しく動作していることを確認します。

3. エフェクトPBのテスト(PLG100-VH)
エフェクト部及び、MEL IN/OUTが正しく動作していることを確認します。

OUTOUT(L,R) にプラグを差し込み、各出力の周波数、出力波形、出力レベルを観測して下さい。

ボリュームはMAXとします。

本テストを行う場合は、本体電源を入れる前に本体CN1 に PB を接続しておいて下さい。

**チェック項目**

OUTPUT(L):1 kHz ±3 Hz, 4.0dBm ±2 dBm (PLG100-VH)
1 kHz ±3 Hz, 3.2dBm ±2 dBm (PLG100-VL)
1 kHz ±3 Hz, 2.0dBm ±2 dBm (PLG100-VS)

[ENTER]を押すと、テストは次に進みます。
[EXIT]を押すと、テスト番号の選択画面となります。

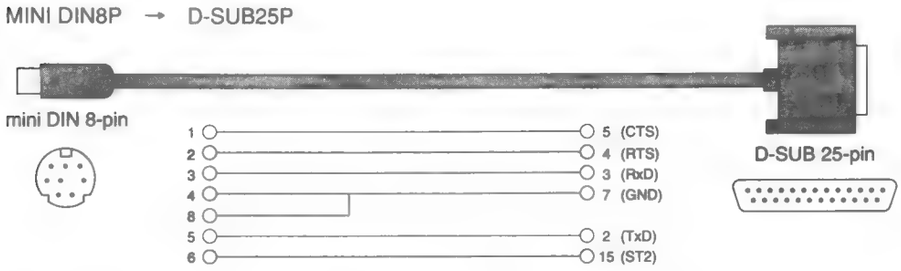
**その他**

MU100R 本体のテストを行う場合は PLG100-VH を使用して下さい。

# ■ ケーブル配線図

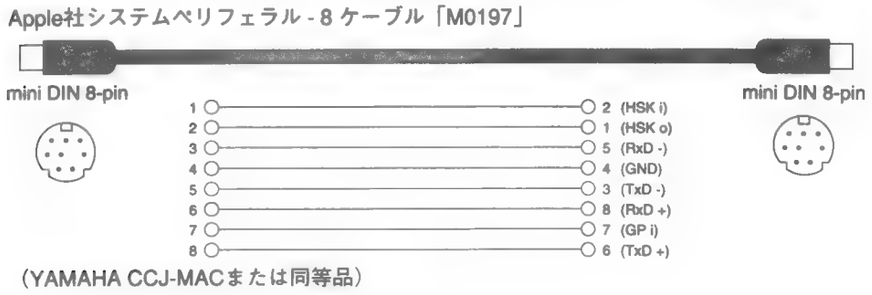
## NEC PC-9800/9821シリーズとの接続

mini DIN 8-pin → D-SUB 25-pin（YAMAHA CCJ-PC1、CCJ-PC1NFまたは同等品）




## Apple Macintoshシリーズとの接続

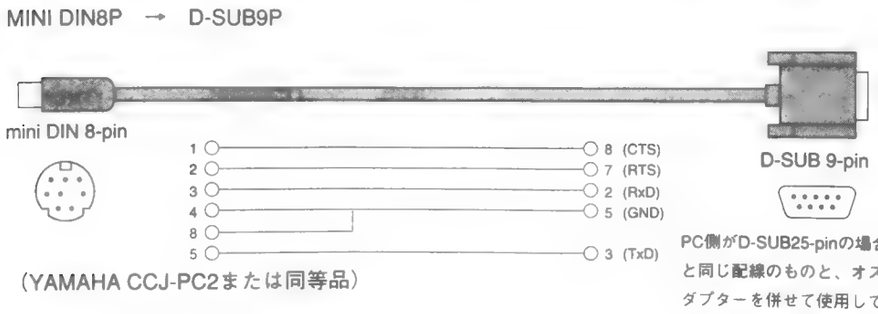
システムペリフェラル - 8 ケーブル（YAMAHA CCJ-MAC または同等品）




（YAMAHA CCJ-MACまたは同等品）

## IBM PC/ATシリーズとの接続

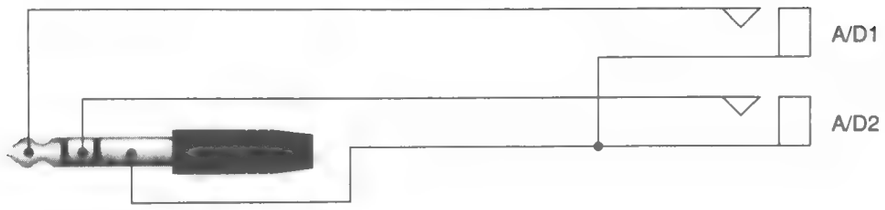
mini DIN 8-pin → D-SUB 9-pin（YAMAHA CCJ-PC2 または同等品）



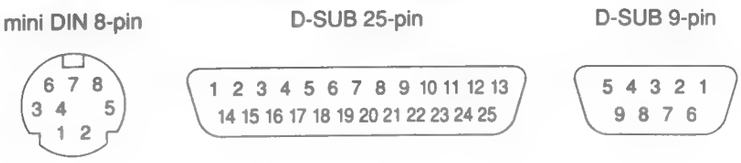

（YAMAHA CCJ-PC2または同等品）

PC側がD-SUB25-pinの場合はPC-9800シリーズと同じ配線のものと、オス、メス変換プラグアダプターを併せて使用してください。

## モノラル×2→ステレオプラグ配線図




## 各プラグのピン番号(オモテから見たピン番号)




Macintochはアップルコンピュータ社の商標です。
PC-9801/9821は日本電気株式会社の商標です。
IBM-PC/ATは、インターナショナルビジネスマシーン社の商標です。
その他、本書に記載されている会社名および商品名等は、各社の登録商標および商標です。

# ■ エラーメッセージ

**Battery Low!**

内蔵バッテリーが消耗しています。

**Illegal Data!**

MIDI受信中にデータエラーが発生しました。もう一度送信してみてください。

**MIDI Buffer Full!**

大量のMIDI情報を短時間に受信したため、処理できませんでした。
不要なMIDI情報はなるべく送らないようにしてください。

**HOST is OffLine!**

コンピューターの電源が切れているか、ケーブルが正しく接続されていません。
ケーブルを確認して、コンピューター側のドライバーやMIDIアプリケーションが正しく機能しているか確認してください。

**SysEx Adrs ERROR!**

受信したシステムエクスクルーシブメッセージのアドレスが違います。
送信データのアドレスを確認してください。

**SysEx Data ERROR!**

受信したシステムエクスクルーシブメッセージのデータが違います。
送信データの内容(MSB、LSBが必要なデータかなど)を確認してください。

**SysEx Size ERROR!**

受信したシステムエクスクルーシブメッセージのサイズが違います。
送信データのサイズを確認してください。

**Check Sum ERROR!**

受信したシステムエクスクルーシブメッセージのチェックサムが違います。
送信データのチェックサムを確認してください。

**This Parameter isn't Excl Data**

ショーエクスクルーシブで見ようとしたパラメーターはエクスクルーシブ情報に変換できません。

**No Parameter**

ショーエクスクルーシブまたはショーコントロールチェンジで見ようとしたパラメーターは有効なパラメーターではありません。

**Rcv CH is OFF!**

ショーコントロールで見ようとしたパラメーターはパートのレシーブチャンネルがOFFになっているためMIDI情報に変換できません。レシーブチャンネルを設定してください。

**PB Com ERROR!**

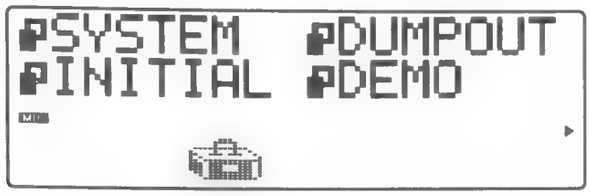
- MU100R本体とプラグインボードとの通信上でエラーが発生しました。電源を切って、プラグインコネクターが正しく差し込まれているか確認してください。
- 大量のMIDI情報を短時間に受信したため、プラグインボードでの処理が間に合いませんでした。不要なMIDI情報はなるべく送らないようにしてください。

## ■ イニシャライズ

MU100R内部の設定を工場出荷状態などの一定の初期状態に戻します。

手順

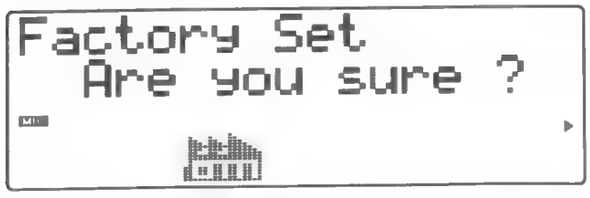
1. ユーティリティのメニューで[SELECT◀/▶]ボタンを押して「INITIAL」を選びます。




2. [ENTER]ボタンを押します。

3. [SELECT◀/▶]ボタンを押して、イニシャライズしたい項目を選びます。

4. [ENTER]ボタンを押して、イニシャライズの確認画面に入ります。




5. [ENTER]ボタンを押して、イニシャライズを実行します。

   終了すると、自動的にイニシャライズメニュー手順3に戻ります。

参考

操作の途中で中止したいときは、[EXIT]ボタンを押すとイニシャライズメニューに戻ります。

注意 ・イニシャライズを実行すると、メモリーやバッファーの中に入っているMU100Rのデータは消えてしまいます。大切なデータはあらかじめコンピュータやYAMAHA MDF2などのMIDIデータファイラーなどに保存してください。

・サウンドモジュールモードを切り替えたときも、ここでのイニシャライズと同様に初期化されます。

**(1) FactSet(ファクトリーセット)**

マルチ、パフォーマンス、エフェクト、イコライザー、システムセットアップを含むすべての内部設定を工場出荷状態に戻します。

**(2) XG Init(XGイニシャライズ)(サウンドモジュールモードがXGのときのみ表示)**

**(3) GM Init(GMイニシャライズ)(サウンドモジュールモードがTG300Bのときのみ表示)**

**(4) C/M Init(C/Mイニシャライズ)(サウンドモジュールモードがC/Mのときのみ表示)**

以下の設定を、各サウンドモジュールモードの初期状態に戻します。

マルチパートコントロール
マルチオールパートコントロール
マルチパートエディット
エフェクト
イコライザー

注意 パフォーマンスモードの設定は初期化されません。

**(5) PFMInit(パフォーマンスイニシャライズ)**
**(サウンドモジュールモードがPFMのときのみ表示)**

パフォーマンスエディットバッファーを初期状態に戻します。

注意 パフォーマンスのインターナルメモリーは初期化されません。

**(6) DrumInit(ドラムイニシャライズ)**
**(サウンドモジュールモードがXG、TG300B、C/Mのいずれかのときのみ表示)**

ドラムセットアップ(drumS1～4)の設定を初期化します。

手順 初期化するドラムセットアップ(drumS1～4)をVALUE[⊕/⊖]ボタンで選択します。

# ■ EFFECT (エフェクト)

## 1. A/D Input Preset

| | | | A/D1 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A/D2 | | | | | | | | | | | |
| BANK | Source | | PGM CNG# = 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 0 | MIC | Preset Name | Off | Mic | Reverb | Chorus | Chorus+Reverb | Karaoke1 | Karaoke2 | Karaoke3 | Echo | Vocal | Studio | Oct Up | Oct Down |
| | | input gain | mic | mic | mic | mic | mic | mic | mic | mic | mic | mic | mic | mic | mic |
| | | var type | - | - | - | - | - | Karaoke1 | Karaoke2 | Karaoke3 | Echo | Stage1 | Exciter | Pitch Change | Pitch Change |
| 1 | GUITAR (Note 1) | Preset Name | Off | Guitar | Reverb | Chorus | Chorus+Reverb | Tube | Stack | Flang Gtr | Clean Gtr | Funk Gtr | Tremolo | Phaser | 5th Guitar |
| | | input gain | mic | mic | mic | mic | mic | mic | mic | mic | mic | mic | mic | mic | mic |
| | | var type | - | - | - | - | - | Amp Sim. | Amp Sim. | Flanger | Celeste | Touch Wah | Tremolo | Phaser | Pitch Change |
| 2 | KEYBOARD | Preset Name | Off | Keyboard | Reverb | Chorus | Chorus+Reverb | Phaser EP | Pan EP | Wah Clavi | Rotary Orgn | Synth Str | Synth Pad | Synth Lead | SFX |
| | | input gain | line | line | line | line | line | line | line | line | line | line | line | line | line |
| | | var type | - | - | - | - | - | Phaser | Auto Pan | Touch Wah | Rotary Speaker | Symphonic | Flanger2 | Delay LCR | Pitch Change |
| 3 | AUDIO (Note 2) | Preset Name | Off | Audio | Reverb | Chorus | Chorus+Reverb | | | | | | | | |
| | | input gain | line | line | line | line | line | | | | | | | | |
| | | var type | - | - | - | - | - | | | | | | | | |
| 18 | STEREO KEYBOARD (Note 3) | Preset Name | Off | Keyboard | Reverb | Chorus | Chorus+Reverb | Phaser EP | Pan EP | Wah Clavi | Rotary Orgn | Synth Str | Synth Pad | Synth Lead | SFX |
| | | input gain | line | line | line | line | line | line | line | line | line | line | line | line | line |
| | | var type | - | - | - | - | - | Phaser | Auto Pan | Touch Wah | Rotary Speaker | Symphonic | Flanger2 | Delay LCR | Pitch Change |
| 19 | STEREO AUDIO (Note 3) | Preset Name | Off | Audio | Reverb | Chorus | Chorus+Reverb | | | | | | | | |
| | | input gain | line | line | line | line | line | | | | | | | | |
| | | var type | - | - | - | - | - | | | | | | | | |

(Note 1) Depending on the guitar, the input may be distorted. Adjust the A/D INPUT VOLUME or the volume of your guitar.

(Note 2) AUDIO sets PAN to Lch for A/D1 and Rch for A/D2.

(Note 3) The Stereo setting can be selected only for A/D1.
The A/D1 and A/D2 inputs will be handled as the Lch and Rch respectively of a stereo signal.
Thus, when you select Stereo, the bank number and program number of part A2 will be displayed as "***" and cannot be set.

# 2. Effect Type List

## REVERB

| No. | MSB | LSB | Effect Type | Remarks |
|---|---|---|---|---|
| 0 | 00H | 00H | NO EFFECT | Turn off the effect. |
| 1 | 01H | 00H | HALL 1 | Reverb simulating the acoustics of a hall. |
| 2 | 01H | 01H | HALL 2 | " |
| 3 | 02H | 00H | ROOM 1 | Reverb simulating the acoustics of a room. |
| 4 | 02H | 01H | ROOM 2 | " |
| 5 | 02H | 02H | ROOM 3 | " |
| 6 | 03H | 00H | STAGE 1 | Reverb appropriate for a solo instrument. |
| 7 | 03H | 01H | STAGE 2 | " |
| 8 | 04H | 00H | PLATE | Reverb simulating a metal plate reverb device. |
| 9 | 10H | 00H | WHITE ROOM | Unique short reverb with a slight initial delay. |
| 10 | 11H | 00H | TUNNEL | Simulation of a cylindrical space extending to left and right. |
| 11 | 12H | 00H | CANYON | A hypothetical acoustic space which extends without limit. |
| 12 | 13H | 00H | BASEMENT | Reverb with distinctive resonance following a slight initial delay. |

## CHORUS

| No. | MSB | LSB | Effect Type | Remarks |
|---|---|---|---|---|
| 0 | 00H | 00H | NO EFFECT | Turn off the effect. |
| 1 | 41H | 00H | CHORUS 1 | A standard chorus effect, adding natural spaciousness to the sound. |
| 2 | 41H | 01H | CHORUS 2 | " |
| 3 | 41H | 02H | CHORUS 3 | " |
| 4 | 41H | 08H | CHORUS 4 | " |
| 5 | 42H | 00H | CELESTE 1 | An effect which uses a 3-phase LFO to add modulation and spaciousness to the sound. |
| 6 | 42H | 01H | CELESTE 2 | " |
| 7 | 42H | 02H | CELESTE 3 | " |
| 8 | 42H | 08H | CELESTE 4 | " |
| 9 | 43H | 00H | FLANGER 1 | An effect reminiscent of a jet airplane taking off and landing. |
| 10 | 43H | 01H | FLANGER 2 | " |
| 11 | 43H | 08H | FLANGER 3 | " |
| 12 | 44H | 00H | SYMPHONIC | A multi-stage version of CELESTE modulation. |
| 13 | 57H | 00H | ENSEMBLE DETUNE | Chorus effect without modulation, created by adding a slightly pitch-shifted sound. |
| 14 | 48H | 00H | PHASER 1 | Cyclically changes the phase to modulate the sound. |

## VARIATION

| No. | MSB | LSB | Effect Type | Remarks |
|---|---|---|---|---|
| 0 | 00H | 00H | NO EFFECT | Turns off the effect. |
| 1 | 01H | 00H | HALL 1 | Reverb simulating the acoustics of a hall. |
| 2 | 01H | 01H | HALL 2 | " |
| 3 | 02H | 00H | ROOM 1 | Reverb simulating the acoustics of a room. |
| 4 | 02H | 01H | ROOM 2 | " |
| 5 | 02H | 02H | ROOM 3 | " |
| 6 | 03H | 00H | STAGE 1 | Reverb appropriate for a solo instrument. |
| 7 | 03H | 01H | STAGE 2 | " |
| 8 | 04H | 00H | PLATE | Reverb simulating a metal plate reverb device. |
| 9 | 10H | 00H | WHITE ROOM | Distinctive short reverb with a slight initial delay. |
| 10 | 11H | 00H | TUNNEL | Simulation of a cylindrical space extending to left and right. |
| 11 | 1[illegible] | 00H | CANYON | A hypothetical acoustic space which extends without limit. |
| 12 | 13H | 00H | BASEMENT | Reverb with distinctive resonance following a slight initial delay. |
| 13 | 05H | 00H | DELAY L,C,R | Three delay sounds L, R and C (center). |
| 14 | 06H | 00H | DELAY L,R | Two delay sounds L and R, with two feedback delays. |
| 15 | 07H | 00H | ECHO | Two delays L and R, with independent feedback delay for L and R. |
| 16 | 08H | 00H | CROSS DELAY | This effect crosses the feedback of two delays. |
| 17 | 09H | 00H | ER 1 | This effect isolates only the early reflection components of the reverb. |
| 18 | 09H | 01H | ER 2 | " |
| 19 | 0AH | 00H | GATE REVERB | Simulation of gated reverb. |
| 20 | 0BH | 00H | REVERSE GATE | Simulation of gated reverb played back in reverse. |
| 21 | 14H | 00H | KARAOKE 1 | Echo for karaoke. |
| 22 | 14H | 01H | KARAOKE 2 | " |
| 23 | 14H | 02H | KARAOKE 3 | " |
| 24 | 41H | 00H | CHORUS 1 | Conventional chorus effect which gives natural spaciousness to the sound. |
| 25 | 41H | 01H | CHORUS 2 | " |
| 26 | 41H | 02H | CHORUS 3 | " |
| 27 | 41H | 08H | CHORUS 4 | " |
| 28 | 42H | 00H | CELESTE 1 | A three-phase LFO is used to give modulation and spaciousness to the sound. |
| 29 | 42H | 01H | CELESTE 2 | " |
| 30 | 42H | 02H | CELESTE 3 | " |
| 31 | 42H | 08H | CELESTE 4 | " |
| 32 | 43H | 00H | FLANGER 1 | An effect reminiscent of a jet airplane taking off and landing. |
| 33 | 43H | 01H | FLANGER 2 | " |
| 34 | 43H | 08H | FLANGER 3 | " |
| 35 | 44H | 00H | SYMPHONIC | A multi-stage version of CELESTE modulation. |
| 36 | 57H | 00H | ENSEMBLE DETUNE | Chorus effect without modulation, created by adding a slightly pitch-shifted sound. |
| 37 | 58H | 00H | AMBIENCE | An effect which adds spatial breadth by blurring the location of the sound. |
| 38 | 45H | 00H | ROTARY SPEAKER | Simulation of a rotary speaker. AC1 (assignable controller 1) etc. can be used to control the rotation speed. |
| 39 | 56H | 00H | 2WAY ROTARY SPEAKER | Simulation of a rotary speaker. AC1 (assignable controller 1) etc. can be used to control the rotation speed. |
| 40 | 46H | 00H | TREMOLO | An effect which cyclically modulates the volume. |
| 41 | 47H | 00H | AUTO PAN | An effect which cyclically moves the sound between left/right and front/back. |
| 42 | 48H | 00H | PHASER 1 | Cyclically changes the phase to modulate the sound. |
| 43 | 48H | 08H | PHASER 2 | " |
| 44 | 49H | 00H | DISTORTION | Adds distortion with an edge to the sound. Since a noise gate is included, this is suitable for use with A/D input as well. |
| 45 | 49H | 01H | COMP+DISTORTION | Since a compressor is included in the first stage, distortion can be applied evenly, regardless of the input level. |
| 46 | 4AH | 00H | OVER DRIVE | Adds mild distortion to the sound. Since a noise gate is included, this is suitable for A/D input as well. |
| 47 | 4BH | 00H | AMP SIMULATOR | Simulation of a guitar amp. Since a noise gate is included, this is suitable for use with A/D input as well. |
| 48 | 4CH | 00H | 3BAND EQ(MONO) | Mono EQ with equalization of LOW, MID and HIGH. |
| 49 | 4DH | 00H | 2BAND EQ(STEREO) | Stereo EQ with equalization of LOW and HIGH. Ideal for Drum Parts. |
| 50 | 4EH | 00H | AUTO WAH(LFO) | Cyclically changes the center frequency of a wah filter. Can also be used with AC1 etc. as a pedal wah. |
| 51 | 4EH | 01H | AUTO WAH+DIST | Applies DISTORTION to the output of AUTO WAH to distort the sound. Can also be used with AC1 etc. as a pedal wah. |
| 52 | 4EH | 02H | AUTO WAH+ODRV | Applies OVERDRIVE to the output of AUTO WAH to distort the sound. Can also be used with AC1 etc. as a pedal wah. |
| 53 | 52H | 00H | TOUCH WAH 1 | Changes the center frequency of a wah filter according to the input level. Can also be used with AC1 etc. as a pedal way. |
| 54 | 52H | 01H | TOUCH WAH 2 | Applies DISTORTION to the output of TOUCH WAH to distort the sound. Can also be used with AC1 etc. as a pedal wah. |
| 55 | 52H | 02H | TOUCH WAH+DIST | Applies OVERDRIVE to the output of TOUCH WAH to distort the sound. Can also be used with AC1 etc. as a pedal wah. |
| 56 | 52H | 08H | TOUCH WAH+ODRV | Changes the center frequency of a wah filter according to the input level. Can also be used with AC1 etc. as a pedal wah. |
| 57 | 50H | 00H | PITCH CHANGE 1 | This effect changes the pitch of the input signal. |
| 58 | 50H | 01H | PITCH CHANGE 2 | " |
| 59 | 51H | 00H | AURAL EXCITER® | This effect adds new overtones to the input signal to make the sound stand out. |
| 60 | 53H | 00H | COMPRESSOR | Holds down the output when the input exceeds a specified level. Can also be used to add a sense of attack to the sound. |
| 61 | 54H | 00H | NOISE GATE | Gates the input when the input signal falls below a specified level. Useful for cutting noise from the A/D input, etc. |
| 62 | 55H | 00H | VOICE CANCEL | Attenuates the vocal part from sources such as CDs. |
| 63 | 5DH | 00H | TALKING MODULATOR | Adds a vowel sound to the input signal. |
| 64 | 5EH | 00H | LO-FI | Degrades the audio quality of the input signal. |
| 65 | 5FH | 00H | DIST+DELAY | DISTORTION and DELAY are connected in series. |
| 66 | 5FH | 01H | OVERDRIVE+DELAY | OVERDRIVE and DELAY are connected in series. |
| 67 | 60H | 00H | COMP+DIST+DELAY | COMPRESSOR, DISTORTION and DELAY are connected in series. |
| 68 | 60H | 01H | COMP+OVERDRIVE+DELAY | COMPRESSOR, OVERDRIVE and DELAY are connected in series. |
| 69 | 61H | 00H | WAH+DIST+DELAY | TOUCH WAH, DISTORTION and DELAY are connected in series. |
| 70 | 61H | 01H | WAH+OVERDRIVE+DELAY | TOUCH WAH, OVERDRIVE and DELAY are connected in series. |
| 71 | 40H | 00H | THRU | Bypass without applying an effect. |

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## INSERTION1,2

| No. | MSB | LSB | Effect Type | Remarks |
|---|---|---|---|---|
| 0 | 40H | 00H | THRU | Bypass without applying an effect. |
| 1 | 01H | 00H | HALL 1 | Reverb simulating the acoustics of a hall. |
| 2 | 01H | 01H | HALL 2 | " |
| 3 | 02H | 00H | ROOM 1 | Reverb simulating the acoustics of a room. |
| 4 | 02H | 01H | ROOM 2 | " |
| 5 | 02H | 02H | ROOM 3 | " |
| 6 | 03H | 00H | STAGE 1 | Reverb appropriate for a solo instrument. |
| 7 | 03H | 01H | STAGE 2 | " |
| 8 | 04H | 00H | PLATE | Reverb simulating a metal plate reverb device. |
| 9 | 05H | 00H | DELAY L,C,R | Three delay sounds L, R and C (center). |
| 10 | 06H | 00H | DELAY L,R | Two delay sounds L and R, with two feedback delays. |
| 11 | 07H | 00H | ECHO | Two delays L and R, with independent feedback delay for L and R. |
| 12 | 08H | 00H | CROSS DELAY | This effect crosses the feedback of two delays. |
| 13 | 14H | 00H | KARAOKE 1 | Echo for karaoke. |
| 14 | 14H | 01H | KARAOKE 2 | " |
| 15 | 14H | 02H | KARAOKE 3 | " |
| 16 | 41H | 00H | CHORUS 1 | Conventional chorus effect which gives natural spaciousness to the sound. |
| 17 | 41H | 01H | CHORUS 2 | " |
| 18 | 41H | 02H | CHORUS 3 | " |
| 19 | 41H | 08H | CHORUS 4 | " |
| 20 | 42H | 00H | CELESTE 1 | A three-phase LFO is used to give modulation and spaciousness to the sound. |
| 21 | 42H | 01H | CELESTE 2 | " |
| 22 | 42H | 02H | CELESTE 3 | " |
| 23 | 42H | 08H | CELESTE 4 | " |
| 24 | 43H | 00H | FLANGER 1 | An effect reminiscent of a jet airplane taking off and landing. |
| 25 | 43H | 01H | FLANGER 2 | " |
| 26 | 43H | 08H | FLANGER 3 | " |
| 27 | 44H | 00H | SYMPHONIC | A multi-stage version of CELESTE modulation. |
| 28 | 57H | 00H | ENSEMBLE DETUNE | Chorus effect without modulation, created by adding a slightly pitch-shifted sound. |
| 29 | 45H | 00H | ROTARY SPEAKER | Simulation of a rotary speaker. AC1 (assignable controller 1) etc. can be used to control the rotation speed. |
| 30 | 46H | 00H | TREMOLO | An effect which cyclically modulates the volume. |
| 31 | 47H | 00H | AUTO PAN | An effect which cyclically moves the sound between left/right and front/back. |
| 32 | 48H | 00H | PHASER 1 | Cyclically changes the phase to modulate the sound. |
| 33 | 49H | 00H | DISTORTION | Adds distortion with an edge to the sound. |
| 34 | 4AH | 00H | OVER DRIVE | Adds mild distortion to the sound. |
| 35 | 4BH | 00H | AMP SIMULATOR | Simulation of a guitar amp. |
| 36 | 4CH | 00H | 3BAND EQ(MONO) | Mono EQ with equalization of LOW, MID and HIGH. |
| 37 | 4DH | 00H | 2BAND EQ(STEREO) | Stereo EQ with equalization of LOW and HIGH. Ideal for Drum Parts. |
| 38 | 4EH | 00H | AUTO WAH(LFO) | Cyclically changes the center frequency of a wah filter. Can also be used with AC1 etc. as a pedal wah. |
| 39 | 52H | 00H | TOUCH WAH 1 | Changes the center frequency of a wah filter according to the input level. Can also be used with AC1 etc. as a pedal wah. |
| 40 | 52H | 08H | TOUCH WAH 2 | Changes the center frequency of a wah filter according to the input level. Can also be used with AC1 etc. as a pedal wah. |
| 41 | 51H | 00H | AURAL EXCITER® | This effect adds new overtones to the input signal to make the sound stand out. |
| 42 | 53H | 00H | COMPRESSOR | Holds down the output when the input exceeds a specified level. Can also be used to add a sense of attack to the sound. |
| 43 | 54H | 00H | NOISE GATE | Gates the input when the input signal falls below a specified level. Useful for cutting noise from the A/D input, etc. |

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# 3. Effect LSB/MSB List

## REVERB TYPE

| TYPE MSB | | TYPE LSB | | | | |
|---|---|---|---|---|---|---|
| DEC | HEX | 00 | 01 | 02 | ... | 08 |
| 000 | 0 | NO EFFECT | | | | |
| 001 | 1 | HALL 1 | HALL 2 | | | |
| 002 | 2 | ROOM 1 | ROOM 2 | ROOM 3 | | |
| 003 | 3 | STAGE 1 | STAGE 2 | | | |
| 004 | 4 | PLATE | | | | |
| 005 | 5 | NO EFFECT | | | | |
| : | : | : | | | | |
| 015 | F | NO EFFECT | | | | |
| 016 | 10 | WHITE ROOM | | | | |
| 017 | 11 | TUNNEL | | | | |
| 018 | 12 | CANYON | | | | |
| 019 | 13 | BASEMENT | | | | |
| 020 | 14 | NO EFFECT | | | | |
| : | : | : | | | | |
| 127 | 7F | NO EFFECT | | | | |

NO EFFECT  Same as basic effects (LSB=00)

## CHORUS TYPE

| TYPE MSB | | TYPE LSB | | | | |
|---|---|---|---|---|---|---|
| DEC | HEX | 00 | 01 | 02 | ... | 08 |
| 000 | 0 | NO EFFECT | | | | |
| 001 | 1 | NO EFFECT | | | | |
| : | : | : | | | | |
| 064 | 40 | NO EFFECT | | | | |
| 065 | 41 | CHORUS 1 | CHORUS 2 | CHORUS 3 | | CHORUS 4 |
| 066 | 42 | CELESTE 1 | CELESTE 2 | CELESTE 3 | | CELESTE 4 |
| 067 | 43 | FLANGER 1 | FLANGER 2 | | | FLANGER 3 |
| 068 | 44 | SYMPHONIC | | | | |
| 069 | 45 | NO EFFECT | | | | |
| : | : | : | | | | |
| 071 | 47 | NO EFFECT | | | | |
| 072 | 48 | PHASER 1 | | | | |
| 073 | 49 | NO EFFECT | | | | |
| : | : | : | | | | |
| 086 | 56 | NO EFFECT | | | | |
| 087 | 57 | ENSEMBLE DETUNE | | | | |
| 088 | 58 | NO EFFECT | | | | |
| : | : | : | | | | |
| 127 | 7F | NO EFFECT | | | | |

NO EFFECT  Same as basic effects (LSB=00)

## VARIATION TYPE (MSB=0 - 63)

| TYPE MSB | | TYPE LSB | | | | |
|---|---|---|---|---|---|---|
| DEC | HEX | 00 | 01 | 02 | ... | 08 |
| 000 | 0 | NO EFFECT | | | | |
| 001 | 1 | HALL 1 | HALL 2 | | | |
| 002 | 2 | ROOM 1 | ROOM 2 | ROOM 3 | | |
| 003 | 3 | STAGE 1 | STAGE 2 | | | |
| 004 | 4 | PLATE | | | | |
| 005 | 5 | DELAY L,C,R | | | | |
| 006 | 6 | DELAY L,R | | | | |
| 007 | 7 | ECHO | | | | |
| 008 | 8 | CROSS DELAY | | | | |
| 009 | 9 | ER 1 | ER 2 | | | |
| 010 | A | GATE REVERB | | | | |
| 011 | B | REVERSE GATE | | | | |
| 012 | C | NO EFFECT or THRU | | | | |
| : | : | : | | | | |
| 015 | F | NO EFFECT or THRU | | | | |
| 016 | 10 | WHITE ROOM | | | | |
| 017 | 11 | TUNNEL | | | | |
| 018 | 12 | CANYON | | | | |
| 019 | 13 | BASEMENT | | | | |
| 020 | 14 | KARAOKE 1 | KARAOKE 2 | KARAOKE 3 | | |
| 021 | 15 | NO EFFECT or THRU | | | | |
| : | : | : | | | | |
| 063 | 3F | NO EFFECT or THRU | | | | |

NO EFFECT (for SYS) or THRU (for INS) Same as basic effects (LSB=00)

## VARIATION TYPE (MSB=64 - 127)

| TYPE MSB | | TYPE LSB | | | | |
|---|---|---|---|---|---|---|
| DEC | HEX | 00 | 01 | 02 | ... | 08 |
| 064 | 40 | THRU | | | | |
| 065 | 41 | CHORUS 1 | CHORUS 2 | CHORUS 3 | | CHORUS 4 |
| 066 | 42 | CELESTE 1 | CELESTE 2 | CELESTE 3 | | CELESTE 4 |
| 067 | 43 | FLANGER 1 | FLANGER 2 | | | FLANGER 3 |
| 068 | 44 | SYMPHONIC | | | | |
| 069 | 45 | ROTARY SPEAKER | | | | |
| 070 | 46 | TREMOLO | | | | |
| 071 | 47 | AUTO PAN | | | | |
| 072 | 48 | PHASER 1 | | | | PHASER 2 |
| 073 | 49 | DISTORTION | COMP+DISTORTION | | | |
| 074 | 4A | OVER DRIVE | | | | |
| 075 | 4B | AMP SIMULATOR | | | | |
| 076 | 4C | 3-BAND EQ | | | | |
| 077 | 4D | 2-BAND EQ | | | | |
| 078 | 4E | AUTO WAH(LFO) | AUTO WAH+DIST | AUTO WAH+OVERDRIVE | | |
| 079 | 4F | THRU | | | | |
| 080 | 50 | PITCH CHANGE1 | PITCH CHANGE2 | | | |
| 081 | 51 | AURAL EXCITER® | | | | |
| 082 | 52 | TOUCH WAH 1 | TOUCH WAH+DIST | TOUCH WAH+OVERDRIVE | | TOUCH WAH 2 |
| 083 | 53 | COMPRESSOR | | | | |
| 084 | 54 | NOISE GATE | | | | |
| 085 | 55 | VOICE CANCEL | | | | |
| 086 | 56 | 2WAY ROTARY SPEAKER | | | | |
| 087 | 57 | ENSEMBLE DETUNE | | | | |
| 088 | 58 | AMBIENCE | | | | |
| 089 | 59 | THRU | | | | |
| : | : | : | | | | |
| 092 | 5C | THRU | | | | |
| 093 | 5D | TALKING MODULATOR | | | | |
| 094 | 5E | LO-FI | | | | |
| 095 | 5F | DIST+DELAY | OVERDRIVE+DELAY | | | |
| 096 | 60 | COMP+DIST+DELAY | COMP+OVERDRIVE+DELAY | | | |
| 097 | 61 | WAH+DIST+DELAY | WAH+OVERDRIVE+DELAY | | | |
| 098 | 62 | THRU | | | | |
| : | : | : | | | | |
| 127 | 7F | THRU | | | | |

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## INSERTION TYPE

| TYPE MSB | | TYPE LSB | | | | |
|---|---|---|---|---|---|---|
| DEC | HEX | 00 | 01 | 02 | ... | 08 |
| 000 | 0 | THRU | | | | |
| 001 | 1 | HALL 1 | HALL 2 | | | |
| 002 | 2 | ROOM 1 | ROOM 2 | ROOM 3 | | |
| 003 | 3 | STAGE 1 | STAGE 2 | | | |
| 004 | 4 | PLATE | | | | |
| 005 | 5 | DELAY L,C,R | | | | |
| 006 | 6 | DELAY L,R | | | | |
| 007 | 7 | ECHO | | | | |
| 008 | 8 | CROSS DELAY | | | | |
| 009 | 9 | THRU | | | | |
| : | : | : | | | | |
| 019 | 13 | THRU | | | | |
| 020 | 14 | KARAOKE 1 | KARAOKE 2 | KARAOKE 3 | | |
| 021 | 15 | THRU | | | | |
| : | : | : | | | | |
| 063 | 3F | THRU | | | | |
| 064 | 40 | THRU | | | | |
| 065 | 41 | CHORUS 1 | CHORUS 2 | CHORUS 3 | | CHORUS 4 |
| 066 | 42 | CELESTE 1 | CELESTE 2 | CELESTE 3 | | CELESTE 4 |
| 067 | 43 | FLANGER 1 | FLANGER 2 | FLANGER 3 | | |
| 068 | 44 | SYMPHONIC | | | | |
| 069 | 45 | ROTARY SPEAKER | | | | |
| 070 | 46 | TREMOLO | | | | |
| 071 | 47 | AUTO PAN | | | | |
| 072 | 48 | PHASER 1 | | | | |
| 073 | 49 | DISTORTION | | | | |
| 074 | 4A | OVER DRIVE | | | | |
| 075 | 4B | AMP SIMULATOR | | | | |
| 076 | 4C | 3BAND EQ | | | | |
| 077 | 4D | 2-BAND EQ | | | | |
| 078 | 4E | AUTO WAH(LFO) | | | | |
| 079 | 4F | THRU | | | | |
| 080 | 50 | THRU | | | | |
| 081 | 51 | AURAL EXCITER® | | | | |
| 082 | 52 | TOUCH WAH 1 | | | | TOUCH WAH 2 |
| 083 | 53 | COMPRESSOR | | | | |
| 084 | 54 | NOISE GATE | | | | |
| 085 | 55 | THRU | | | | |
| 086 | 56 | THRU | | | | |
| 087 | 57 | ENSEMBLE DETUNE | | | | |
| 088 | 58 | THRU | | | | |
| : | : | : | | | | |
| 127 | 7F | THRU | | | | |

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## UNIQUE INSERTION EFFECT (HARMONY) TYPE

| TYPE MSB | | TYPE LSB | | | | |
|---|---|---|---|---|---|---|
| DEC | HEX | 00 | 01 | 02 | ... | 08 |
| 000 | 0 | THRU | | | | |
| : | : | : | | | | |
| 088 | 58 | THRU | | | | |
| 089 | 59 | VOCODER HARMONY | | | | |
| 090 | 5A | CHORDAL HARMONY | | | | |
| 091 | 5B | DETUNE HARMONY | | | | |
| 092 | 5C | CHROMATIC HARMONY | | | | |
| 093 | 5D | THRU | | | | |
| : | : | : | | | | |
| 127 | 7F | THRU | | | | |

THRU Same as basic effects (LSB=00)

# 4. Effect Parameter List

***Note***

- *Parameters marked with a ● in the "Control" column can be controlled from an AC1 (assignable controller 1) etc. However, this is valid only for a Variation effect (when selected for Insertion) and for Insertion effects 1/2.*
- *Dry/Wet is valid only for a Variation effect (when selected for Insertion) and for Insertion effects 1/2.*
- *Parameters 1 - 5 can be edited from the front panel of the MU100R.*
- *Abbreviations used in the effect block diagrams*

  *LPF = Low Pass Filter*
  *HPF = High Pass Filter*
  *LSF = Low Shelving Filter*
  *HSF = High Shelving Filter*
  *PDF = Peak Dip Filter*
  *EF = Envelope Follower*
  *ER = Early Reflection*

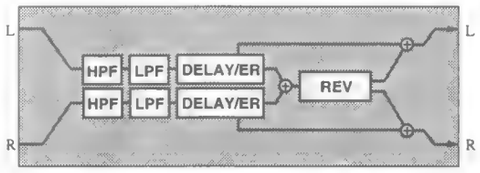
● HALL1, 2
ROOM1, 2, 3
STAGE1, 2
PLATE (Reverb, Variation, Insertion1, 2 block)

| No. | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | Reverb Time | 0.3 – 30.0s | 0-69 | table#4 | |
| 2 | Diffusion | 0 – 10 | 0-10 | | |
| 3 | Initial Delay | 0 – 63 | 0-63 | table#5 | |
| 4 | HPF Cutoff | Thru – 8.0kHz | 0-52 | table#3 | |
| 5 | LPF Cutoff | 1.0k – Thru | 34-60 | table#3 | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | Dry/Wet | D63>W – D=W – D<W63 | 1-127 | | ● |
| 11 | Rev Delay | 0 – 63 | 0-63 | table#5 | |
| 12 | Density | 0 – 4 (reverb, variation block)<br>0 – 2 (insertion1,2 block) | 0-4<br>0-2 | | |
| 13 | Er/Rev Balance | E63>R – E=R – E<R63 | 1-127 | | |
| 14 | High Damp | 0.1 – 1.0 | 1-10 | | |
| 15 | Feedback Level | -63 – +63 | 1-127 | | |
| 16 | | | | | |

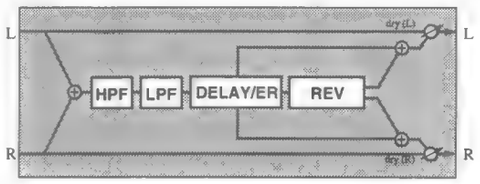
WHITE ROOM
TUNNEL
CANYON
BASEMENT (Reverb, Variation block)

| No. | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | Reverb Time | 0.3 – 30.0s | 0-69 | table#4 | |
| 2 | Diffusion | 0 – 10 | 0-10 | | |
| 3 | Initial Delay | 0 – 63 | 0-63 | table#5 | |
| 4 | HPF Cutoff | Thru – 8.0kHz | 0-52 | table#3 | |
| 5 | LPF Cutoff | 1.0k – Thru | 34-60 | table#3 | |
| 6 | Width | 0.5 – 10.2m | 0-37 | table#11 | |
| 7 | Heigt | 0.5 – 20.2m | 0-73 | table#11 | |
| 8 | Depth | 0.5 – 30.2m | 0-104 | table#11 | |
| 9 | Wall Vary | 0 – 30 | 0-30 | | |
| 10 | Dry/Wet | D63>W – D=W – D<W63 | 1-127 | | ● |
| 11 | Rev Delay | 0 – 63 | 0-63 | table#5 | |
| 12 | Density | 0 – 4 | 0-4 | | |
| 13 | Er/Rev Balance | E63>R – E=R – E<R63 | 1-127 | | |
| 14 | High Damp | 0.1 – 1.0 | 1-10 | | |
| 15 | Feedback Level | -63 – +63 | 1-127 | | |
| 16 | | | | | |

Reverb Block

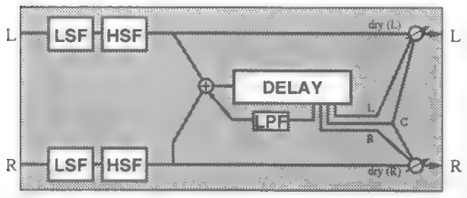



Variation, Insertion Block



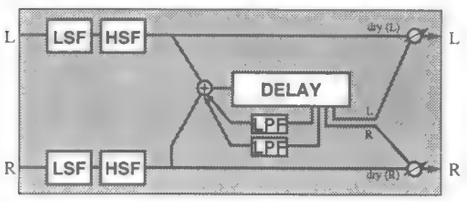
## ● DELAY L, C, R (Variation, Insertion 1, 2 block)

| No | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | Lch Delay | 0.1 – 1486.0ms (variation block) | 1-14860 | | |
| | | 0.1 – 742.9ms (insertion1,2 block) | 1-7429 | | |
| 2 | Rch Delay | 0.1 – 1486.0ms (variation block) | 1-14860 | | |
| | | 0.1 – 742.9ms (insertion1,2 block) | 1-7429 | | |
| 3 | Cch Delay | 0.1 – 1486.0ms (variation block) | 1-14860 | | |
| | | 0.1 – 742.9ms (insertion1,2 block) | 1-7429 | | |
| 4 | Feedback Delay | 0.1 – 1486.0ms (variation block) | 1-14860 | | |
| | | 0.1 – 742.9ms (insertion1,2 block) | 1-7429 | | |
| 5 | Feedback Level | -63 – +63 | 1-127 | | |
| 6 | Cch Level | 0 – 127 | 0-127 | | |
| 7 | High Damp | 0.1 – 1.0 | 1-10 | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | Dry/Wet | D63>W – D=W – D<W63 | 1-127 | | ● |
| 11 | | | | | |
| 12 | | | | | |
| 13 | EQ Low Frequency | 32Hz – 2.0kHz | 4-40 | table#3 | |
| 14 | EQ Low Gain | -12 – +12dB | 52-76 | | |
| 15 | EQ High Frequency | 500Hz – 16.0kHz | 28-58 | table#3 | |
| 16 | EQ High Gain | -12 – +12dB | 52-76 | | |



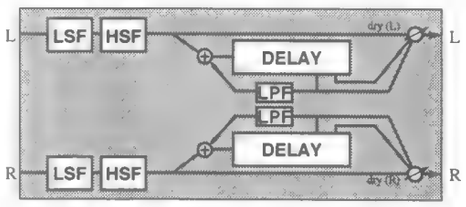

## ● DELAY L, R (Variation, Insertion 1, 2 block)

| No | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | Lch Delay | 0.1 – 1486.0ms (variation block) | 1-14860 | | |
| | | 0.1 – 742.9ms (insertion1,2 block) | 1-7429 | | |
| 2 | Rch Delay | 0.1 – 1486.0ms (variation block) | 1-14860 | | |
| | | 0.1 – 742.9ms (insertion1,2 block) | 1-7429 | | |
| 3 | Feedback Delay 1 | 0.1 – 1486.0ms (variation block) | 1-14860 | | |
| | | 0.1 – 742.9ms (insertion1,2 block) | 1-7429 | | |
| 4 | Feedback Delay 2 | 0.1 – 1486.0ms (variation block) | 1-14860 | | |
| | | 0.1 – 742.9ms (insertion1,2 block) | 1-7429 | | |
| 5 | Feedback Level | -63 – +63 | 1-127 | | |
| 6 | High Damp | 0.1 – 1.0 | 1-10 | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | Dry/Wet | D63>W – D=W – D<W63 | 1-127 | | ● |
| 11 | | | | | |
| 12 | | | | | |
| 13 | EQ Low Frequency | 32Hz – 2.0kHz | 4-40 | table#3 | |
| 14 | EQ Low Gain | -12 – +12dB | 52-76 | | |
| 15 | EQ High Frequency | 500Hz – 16.0kHz | 28-58 | table#3 | |
| 16 | EQ High Gain | -12 – +12dB | 52-76 | | |



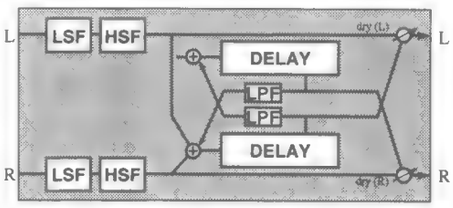

## ● ECHO (Variation, Insertion 1, 2 block)

| No. | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | Lch Delay1 | 0.1 – 743.0ms (variation block) | 1-7430 | | |
| | | 0.1 – 371.4ms (insertion1,2 block) | 1-3714 | | |
| 2 | Lch Feedback Level | -63 – +63 | 1-127 | | |
| 3 | Rch Delay1 | 0.1 – 743.0ms (variation block) | 1-7430 | | |
| | | 0.1 – 371.4ms (insertion1,2 block) | 1-3714 | | |
| 4 | Rch Feedback Level | -63 – +63 | 1-127 | | |
| 5 | High Damp | 0.1 – 1.0 | 1-10 | | |
| 6 | Lch Delay2 | 0.1 – 743.0ms (variation block) | 1-7430 | | |
| | | 0.1 – 371.4ms (insertion1,2 block) | 1-3714 | | |
| 7 | Rch Delay2 | 0.1 – 743.0ms (variation block) | 1-7430 | | |
| | | 0.1 – 371.4ms (insertion1,2 block) | 1-3714 | | |
| 8 | Delay2 Level | 0 – 127 | 0-127 | | |
| 9 | | | | | |
| 10 | Dry/Wet | D63>W – D=W – D<W63 | 1-127 | | ● |
| 11 | | | | | |
| 12 | | | | | |
| 13 | EQ Low Frequency | 32Hz – 2.0kHz | 4-40 | table#3 | |
| 14 | EQ Low Gain | -12 – +12dB | 52-76 | | |
| 15 | EQ High Frequency | 500Hz – 16.0kHz | 28-58 | table#3 | |
| 16 | EQ High Gain | -12 – +12dB | 52-76 | | |




## ● CROSS DELAY (Variation, Insertion 1, 2 block)

| No. | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | L->R Delay | 0.1 – 743.0ms (variation block) | 1-7430 | | |
| | | 0.1 – 371.4ms (insertion1,2 block) | 1-3714 | | |
| 2 | R->L Delay | 0.1 – 743.0ms (variation block) | 1-7430 | | |
| | | 0.1 – 371.4ms (insertion1,2 block) | 1-3714 | | |
| 3 | Feedback Level | -63 – +63 | 1-127 | | |
| 4 | Input Select | L,R,L&R | 0-2 | | |
| 5 | High Damp | 0.1 – 1.0 | 1-10 | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | Dry/Wet | D63>W – D=W – D<W63 | 1-127 | | ● |
| 11 | | | | | |
| 12 | | | | | |
| 13 | EQ Low Frequency | 32Hz – 2.0kHz | 4-40 | table#3 | |
| 14 | EQ Low Gain | -12 – +12dB | 52-76 | | |
| 15 | EQ High Frequency | 500Hz – 16.0kHz | 28-58 | table#3 | |
| 16 | EQ High Gain | -12 – +12dB | 52-76 | | |

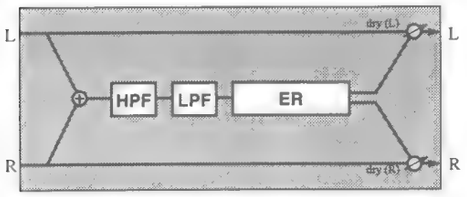


● EARLY REF 1, 2 (Variation block)

| No. | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | Type | S-H, L-H, Rdm, Rvs, Plt, Spr | 0-5 | | |
| 2 | Room Size | 0.1 – 7.0 | 0-44 | table#6 | |
| 3 | Diffusion | 0 – 10 | 0-10 | | |
| 4 | Initial Delay | 0 – 63 | 0-63 | table#5 | |
| 5 | Feedback Level | -63 – +63 | 1-127 | | |
| 6 | HPF Cutoff | Thru – 8.0kHz | 0-52 | table#3 | |
| 7 | LPF Cutoff | 1.0k – Thru | 34-60 | table#3 | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | Dry/Wet | D63>W – D=W – D<W63 | 1-127 | | ● |
| 11 | Liveness | 0 – 10 | 0-10 | | |
| 12 | Density | 0 – 3 | 0-3 | | |
| 13 | High Damp | 0.1 – 1.0 | 1-10 | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |

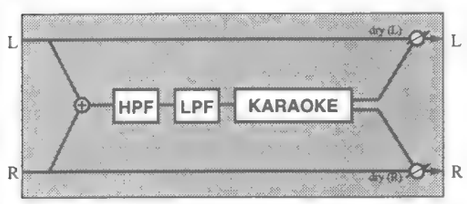
GATE REVERB
REVERSE GATE (Variation block)

| No. | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | Type | TypeA,TypeB | 0-1 | | |
| 2 | Room Size | 0.1 – 20.0 | 0-127 | table#6 | |
| 3 | Diffusion | 0 – 10 | 0-10 | | |
| 4 | Initial Delay | 0 – 127 | 0-127 | table#5 | |
| 5 | Feedback Level | -63 – +63 | 1-127 | | |
| 6 | HPF Cutoff | Thru – 8.0kHz | 0-52 | table#3 | |
| 7 | LPF Cutoff | 1.0k – Thru | 34-60 | table#3 | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | Dry/Wet | D63>W – D=W – D<W63 | 1-127 | | ● |
| 11 | Liveness | 0 – 10 | 0-10 | | |
| 12 | Density | 0 – 3 | 0-3 | | |
| 13 | High Damp | 0.1 – 1.0 | 1-10 | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |




● KARAOKE1, 2, 3 (Variation, Insertion 1, 2 block)

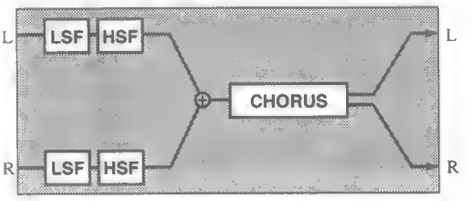
| No. | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | Delay Time | 0 – 127 | 0-127 | table#7 | |
| 2 | Feedback Level | -63 – +63 | 1-127 | | |
| 3 | HPF Cutoff | Thru – 8.0kHz | 0-52 | table#3 | |
| 4 | LPF Cutoff | 1.0k – Thru | 34-60 | table#3 | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | Dry/Wet | D63>W – D=W – D<W63 | 1-127 | | ● |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |



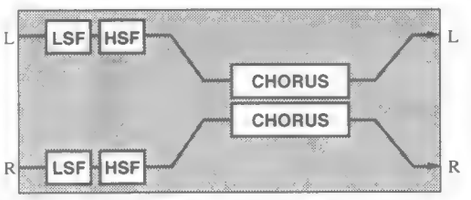

● CHORUS 1, 2, 3, 4
CELESTE 1, 2, 3, 4 (Chorus, Variation, Insertion 1, 2 block)

| No | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | LFO Frequency | 0.00Hz – 39.7Hz | 0-127 | table#1 | |
| 2 | LFO Depth | 0 – 127 | 0-127 | | |
| 3 | Feedback Level | -63 – +63 | 1-127 | | |
| 4 | Delay Offset | 0 – 127 | 0-127 | table#2 | |
| 5 | | | | | |
| 6 | EQ Low Frequency | 32Hz – 2.0kHz | 4-40 | table#3 | |
| 7 | EQ Low Gain | -12 – +12dB | 52-76 | | |
| 8 | EQ High Frequency | 500Hz – 16.0kHz | 28-58 | table#3 | |
| 9 | EQ High Gain | -12 – +12dB | 52-76 | | |
| 10 | Dry/Wet | D63>W – D=W – D<W63 | 1-127 | | ● |
| 11 | EQ Mid Frequency | 100Hz – 10.0kHz (variation block) | 14-54 | table#3 | |
| 12 | EQ Mid Gain | -12 – +12dB (variation block) | 52-76 | | |
| 13 | EQ Mid Width | 1.0 – 12.0 (variation block) | 10-120 | | |
| 14 | | | | | |
| 15 | Input Mode | mono/stereo | 0-1 | | |
| 16 | | | | | |

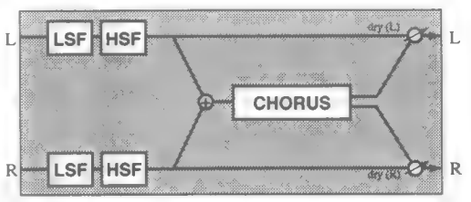
Chorus Block: when input mode = "mono"



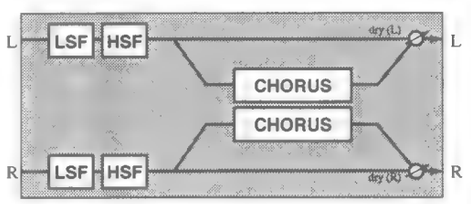

Chorus Block: when input mode = "stereo"




Variation, Insertion Block: when input mode = "mono"



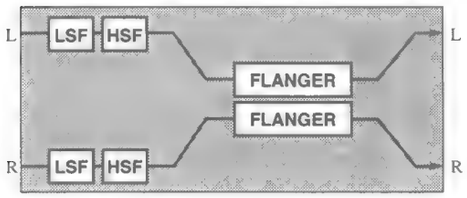

Variation, Insertion Block: when input mode = "stereo"



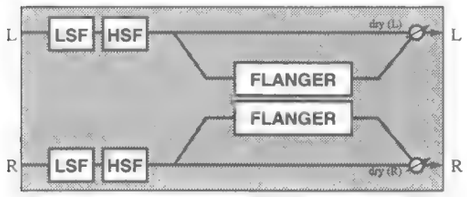
## ● FLANGER 1, 2, 3
(Chorus, Variation, Insertion 1, 2 block)

| No | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | LFO Frequency | 0.00Hz – 39.7Hz | 0-127 | table#1 | |
| 2 | LFO Depth | 0 – 127 | 0-127 | | |
| 3 | Feedback Level | -63 – +63 | 1-127 | | |
| 4 | Delay Offset | 0 – 63 | 0-63 | table#2 | |
| 5 | | | | | |
| 6 | EQ Low Frequency | 32Hz – 2.0kHz | 4-40 | table#3 | |
| 7 | EQ Low Gain | -12 – +12dB | 52-76 | | |
| 8 | EQ High Frequency | 500Hz – 16.0kHz | 28-58 | table#3 | |
| 9 | EQ High Gain | -12 – +12dB | 52-76 | | |
| 10 | Dry/Wet | D63>W – D=W – D<W63 | 1-127 | | ● |
| 11 | EQ Mid Frequency | 100Hz – 10.0kHz (variation block) | 14-54 | table#3 | |
| 12 | EQ Mid Gain | -12 – +12dB (variation block) | 52-76 | | |
| 13 | EQ Mid Width | 1.0 – 12.0 (variation block) | 10-120 | | |
| 14 | LFO Phase Difference | -180 – +180deg | 4-124 | resolution=3deg | |
| 15 | | | | | |
| 16 | | | | | |

Chorus Block



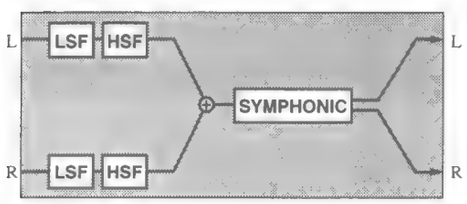

Variation, Insertion Block



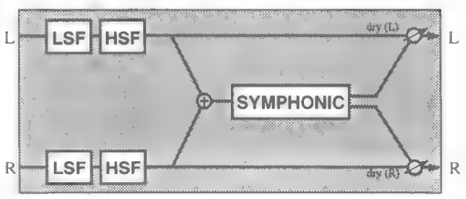

## ● SYMPHONIC
(Chorus, Variation, Insertion 1, 2 block)

| No | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | LFO Frequency | 0.00Hz – 39.7Hz | 0-127 | table#1 | |
| 2 | LFO Depth | 0 – 127 | 0-127 | | |
| 3 | Delay Offset | 0 – 127 | 0-127 | table#2 | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | EQ Low Frequency | 32Hz – 2.0kHz | 4-40 | table#3 | |
| 7 | EQ Low Gain | -12 – +12dB | 52-76 | | |
| 8 | EQ High Frequency | 500Hz – 16.0kHz | 28-58 | table#3 | |
| 9 | EQ High Gain | -12 – +12dB | 52-76 | | |
| 10 | Dry/Wet | D63>W – D=W – D<W63 | 1-127 | | ● |
| 11 | EQ Mid Frequency | 100Hz – 10.0kHz (variation block) | 14-54 | table#3 | |
| 12 | EQ Mid Gain | -12 – +12dB (variation block) | 52-76 | | |
| 13 | EQ Mid Width | 1.0 – 12.0 (variation block) | 10-120 | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |

Chorus Block



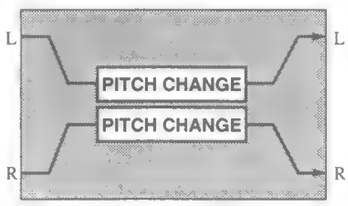

Variation, Insertion Block



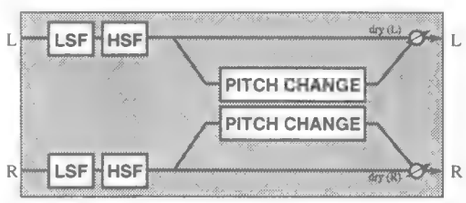

## ● ENSEMBLE DETUNE
(Chorus, Variation, Insertion 1, 2 block)

| No | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | Detune | -50 – +50cent | 14-114 | | |
| 2 | Lch Init Delay | 0 – 127 | 0-127 | table#2 | |
| 3 | Rch Init Delay | 0 – 127 | 0-127 | table#2 | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | Dry/Wet | D63>W – D=W – D<W63 | 1-127 | | ● |
| 11 | EQ Low Frequency | 32Hz – 2.0kHz (variation, insertion1,2 block) | 4-40 | table#3 | |
| 12 | EQ Low Gain | -12 – +12dB (variation, insertion1,2 block) | 52-76 | | |
| 13 | EQ High Frequency | 500Hz – 16.0kHz (variation, insertion1,2 block) | 28-58 | table#3 | |
| 14 | EQ High Gain | -12 – +12dB (variation, insertion1,2 block) | 52-76 | | |
| 15 | | | | | |
| 16 | | | | | |

Chorus Block

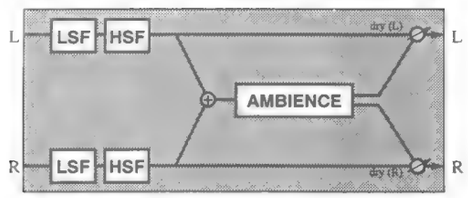



Variation, Insertion Block



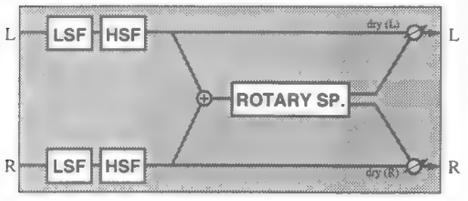

## ● AMBIENCE (Variation block)

| No | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | Delay Time | 0 – 127 | 0-127 | table#2 | |
| 2 | Output Phase | normal/invers | 0-1 | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | EQ Low Frequency | 32Hz – 2.0kHz | 4-40 | table#3 | |
| 7 | EQ Low Gain | -12 – +12dB | 52-76 | | |
| 8 | EQ High Frequency | 500Hz – 16.0kHz | 28-58 | table#3 | |
| 9 | EQ High Gain | -12 – +12dB | 52-76 | | |
| 10 | Dry/Wet | D63>W – D=W – D<W63 | 1-127 | | ● |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |



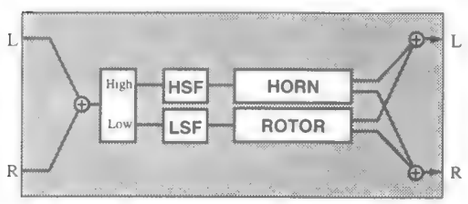

● ROTARY SPEAKER
(Variation, Insertion 1, 2 block)

| No | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | LFO Frequency | 0.00Hz – 39.7Hz | 0-127 | table#1 | ● |
| 2 | LFO Depth | 0 – 127 | 0-127 | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | EQ Low Frequency | 32Hz – 2.0kHz | 4-40 | table#3 | |
| 7 | EQ Low Gain | -12 – +12dB | 52-76 | | |
| 8 | EQ High Frequency | 500Hz – 16.0kHz | 28-58 | table#3 | |
| 9 | EQ High Gain | -12 – +12dB | 52-76 | | |
| 10 | Dry/Wet | D63>W – D=W – D<W63 | 1-127 | | |
| 11 | EQ Mid Frequency | 100Hz – 10.0kHz (variation block) | 14-54 | table#3 | |
| 12 | EQ Mid Gain | -12 – +12dB (variation block) | 52-76 | | |
| 13 | EQ Mid Width | 1.0 – 12.0 (variation block) | 10-120 | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |




● 2WAY ROTARY SPEAKER
(Variation block)

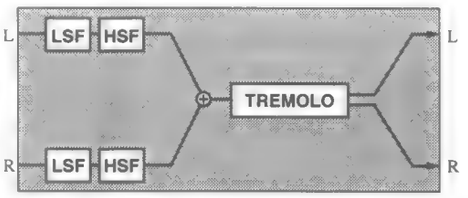
| No | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | Rotor Speed | 0.0Hz – 39.7Hz | 0-127 | table#1 | ● |
| 2 | Drive Low | 0 – 127 | 0-127 | | |
| 3 | Drive High | 0 – 127 | 0-127 | | |
| 4 | Low/High | L63>H – L=H – L<H63 | 1-127 | | |
| 5 | | | | | |
| 6 | EQ Low Frequency | 32Hz – 2.0kHz | 4-40 | table#3 | |
| 7 | EQ Low Gain | -12 – +12dB | 52-76 | | |
| 8 | EQ High Frequency | 500Hz – 16.0kHz | 28-58 | table#3 | |
| 9 | EQ High Gain | -12 – +12dB | 52-76 | | |
| 10 | | | | | |
| 11 | Crossover Frequency | 100Hz – 10.0kHz | 14-54 | table#3 | |
| 12 | Mic L-R Angle | 0deg – 180deg | 0-60 | resolution=3deg. | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |



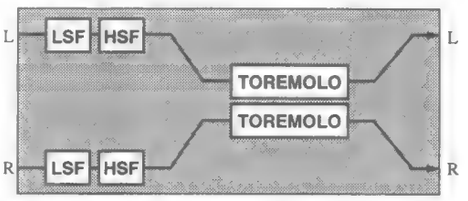

● TREMOLO (Variation, Insertion 1, 2 block)

| No | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | LFO Frequency | 0.00Hz – 39.7Hz | 0-127 | table#1 | ● |
| 2 | AM Depth | 0 – 127 | 0-127 | | |
| 3 | PM Depth | 0 – 127 | 0-127 | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | EQ Low Frequency | 32Hz – 2.0kHz | 4-40 | table#3 | |
| 7 | EQ Low Gain | -12 – +12dB | 52-76 | | |
| 8 | EQ High Frequency | 500Hz – 16.0kHz | 28-58 | table#3 | |
| 9 | EQ High Gain | -12 – +12dB | 52-76 | | |
| 10 | | | | | |
| 11 | EQ Mid Frequency | 100Hz – 10.0kHz (variation block) | 14-54 | table#3 | |
| 12 | EQ Mid Gain | -12 – +12dB (variation block) | 52-76 | | |
| 13 | EQ Mid Width | 1.0 – 12.0 (variation block) | 10-120 | | |
| 14 | LFO Phase Difference | -180 – +180deg | 4-124 | resolution=3deg. | |
| 15 | Input Mode | [illegible] | 0-1 | | |
| 16 | | | | | |

When input mode="mono"

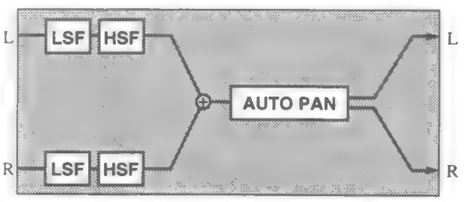



When input mode="stereo"




● AUTO PAN (Variation, Insertion 1, 2 block)

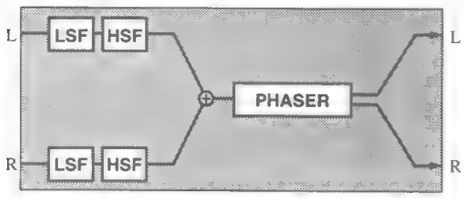
| No | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | LFO Frequency | 0.00Hz – 39.7Hz | 0-127 | table#1 | ● |
| 2 | L/R Depth | 0 – 127 | 0-127 | | |
| 3 | F/R Depth | 0 – 127 | 0-127 | | |
| 4 | PAN Direction | L<->R,L->R,L<-R,Ltum,Rtum,L/R | 0-5 | | |
| 5 | | | | | |
| 6 | EQ Low Frequency | 32Hz – 2.0kHz | 4-40 | table#3 | |
| 7 | EQ Low Gain | -12 – +12dB | 52-76 | | |
| 8 | EQ High Frequency | 500Hz – 16.0kHz | 28-58 | table#3 | |
| 9 | EQ High Gain | -12 – +12dB | 52-76 | | |
| 10 | | | | | |
| 11 | EQ Mid Frequency | 100Hz – 10.0kHz (variation block) | 14-54 | table#3 | |
| 12 | EQ Mid Gain | -12 – +12dB (variation block) | 52-76 | | |
| 13 | EQ Mid Width | 1.0 – 12.0 (variation block) | 10-120 | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |



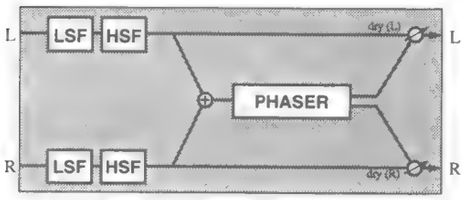
## ● PHASER 1
(Chorus, Variation, Insertion 1, 2 block)

| No | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | LFO Frequency | 0.00Hz – 39.7Hz | 0-127 | table#1 | |
| 2 | LFO Depth | 0 – 127 | 0-127 | | |
| 3 | Phase Shift Offset | 0 – 127 | 0-127 | | |
| 4 | Feedback Level | -63 – +63 | 1-127 | | |
| 5 | | | | | |
| 6 | EQ Low Frequency | 32Hz – 2.0kHz | 4-40 | table#3 | |
| 7 | EQ Low Gain | -12 – +12dB | 52-76 | | |
| 8 | EQ High Frequency | 500Hz – 16.0kHz | 28-58 | table#3 | |
| 9 | EQ High Gain | -12 – +12dB | 52-76 | | |
| 10 | Dry/Wet | D63>W – D=W – D<W63 | 1-127 | | ● |
| 11 | Stage | 4,5,6 (chorus, insertion1,2 block)<br>4 – 12 (variation block) | 4-6<br>4-12 | | |
| 12 | Diffusion | mono/stereo | 0-1 | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |

### Chorus Block

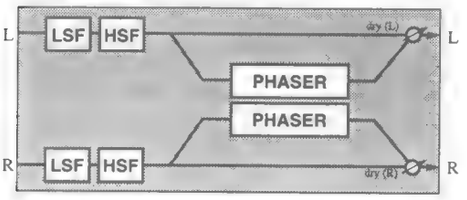



### Variation, Insertion Block




## ● PHASER 2 (Variation block)

| No | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | LFO Frequency | 0.00Hz – 39.7Hz | 0-127 | table#1 | |
| 2 | LFO Depth | 0 – 127 | 0-127 | | |
| 3 | Phase Shift Offset | 0 – 127 | 0-127 | | |
| 4 | Feedback Level | -63 – +63 | 1-127 | | |
| 5 | | | | | |
| 6 | EQ Low Frequency | 32Hz – 2.0kHz | 4-40 | table#3 | |
| 7 | EQ Low Gain | -12 – +12dB | 52-76 | | |
| 8 | EQ High Frequency | 500Hz – 16.0kHz | 28-58 | table#3 | |
| 9 | EQ High Gain | -12 – +12dB | 52-76 | | |
| 10 | Dry/Wet | D63>W – D=W – D<W63 | 1-127 | | ● |
| 11 | Stage | 3,4,5,6 | 3-6 | | |
| 12 | | | | | |
| 13 | LFO Phase Difference | -180deg – +180deg | 4-124 | resolution=3deg | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |



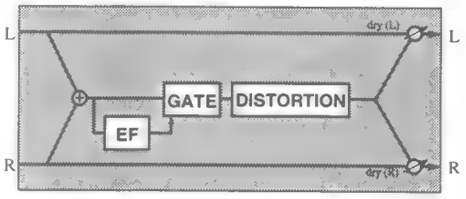

## ● DISTORTION
OVERDRIVE (Variation, Insertion 1, 2 block)

| No | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | Drive | 0 – 127 | 0-127 | | ● |
| 2 | EQ Low Frequency | 32Hz – 2.0kHz | 4-40 | table#3 | |
| 3 | EQ Low Gain | -12 – +12dB | 52-76 | | |
| 4 | LPF Cutoff | 1.0k – Thru | 34-60 | table#3 | |
| 5 | Output Level | 0 – 127 | 0-127 | | |
| 6 | | | | | |
| 7 | EQ Mid Frequency | 100Hz – 10.0kHz | 14-54 | table#3 | |
| 8 | EQ Mid Gain | -12 – +12dB | 52-76 | | |
| 9 | EQ Mid Width | 1.0 – 12.0 | 10-120 | | |
| 10 | Dry/Wet | D63>W – D=W – D<W63 | 1-127 | | |
| 11 | Edge(Clip Curve) | 0 – 127 | 0-127 | mild to sharp | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |

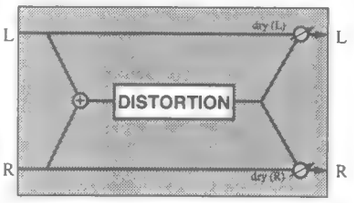
### AMP SIMULATOR
(Variation, Insertion 1, 2 block)

| No | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | Drive | 0 – 127 | 0-127 | | ● |
| 2 | AMP Type | Off Stack,Combo,Tube | 0-3 | | |
| 3 | LPF Cutoff | 1.0k – Thru | 34-60 | table#3 | |
| 4 | Output Level | 0 – 127 | 0-127 | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | Dry/Wet | D63>W – D=W – D<W63 | 1-127 | | |
| 11 | Edge(Clip Curve) | 0 – 127 | 0-127 | mild to sharp | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |

### Variation Block

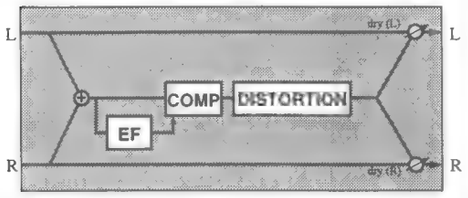



### Insertion Block



## ● COMP+DIST (Variation block)

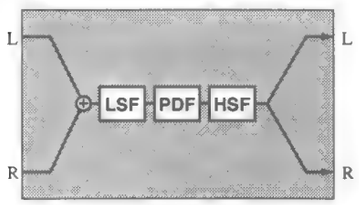
| No. | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | Drive | 0 – 127 | 0-127 | | ● |
| 2 | EQ Low Frequency | 32Hz – 2.0kHz | 4-40 | table#3 | |
| 3 | EQ Low Gain | -12 – +12dB | 52-76 | | |
| 4 | LPF Cutoff | 1.0k – Thru | 34-60 | table#3 | |
| 5 | Output Level | 0 – 127 | 0-127 | | |
| 6 | | | | | |
| 7 | EQ Mid Frequency | 100Hz – 10.0kHz | 14-54 | table#3 | |
| 8 | EQ Mid Gain | -12 – +12dB | 52-76 | | |
| 9 | EQ Mid Width | 1.0 – 12.0 | 10-120 | | |
| 10 | Dry/Wet | D63>W – D=W – D<W63 | 1-127 | | |
| 11 | Edge(Clip Curve) | 0 – 127 | 0-127 | mild to sharp | |
| 12 | [illegible] | 1ms – 40ms | 0-19 | table#8 | |
| 13 | [illegible] | 10ms – 680ms | 0-15 | table#9 | |
| 14 | [illegible] | -48dB – -6dB | 79-121 | | |
| 15 | Ratio | 1.0 – 20.0 | 0-7 | table#10 | |
| 16 | | | | | |



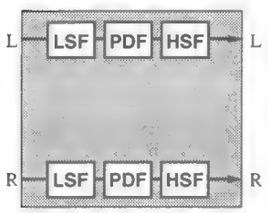

## ● 3BAND EQ (MONO)
(Variation, Insertion 1, 2 block)

| No. | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | EQ Low Gain | -12 – +12dB | 52-76 | | |
| 2 | EQ Mid Frequency | 100Hz – 10.0kHz | 14-54 | table#3 | |
| 3 | EQ Mid Gain | -12 – +12dB | 52-76 | | |
| 4 | EQ Mid Width | 1.0 – 12.0 | 10-120 | | |
| 5 | EQ High Gain | -12 – +12dB | 52-76 | | |
| 6 | EQ Low Frequency | 50Hz – 2.0kHz | 8-40 | table#3 | |
| 7 | EQ High Frequency | 500Hz – 16.0kHz | 28-58 | table#3 | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | Input Mode | mono/stereo | 0-1 | | |
| 16 | | | | | |

When input mode="mono"

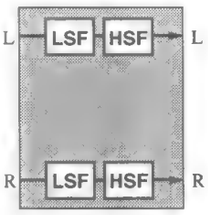



When input mode="stereo"




## ● 2BAND EQ (STEREO)
(Variation, Insertion 1, 2 block)

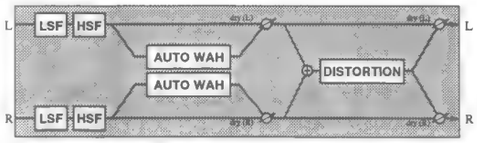
| No. | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | EQ Low Frequency | 32Hz – 2.0kHz | 4-40 | table#3 | |
| 2 | EQ Low Gain | -12 – +12dB | 52-76 | | |
| 3 | EQ High Frequency | 500Hz – 16.0kHz | 28-58 | table#3 | |
| 4 | EQ High Gain | -12 – +12dB | 52-76 | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |



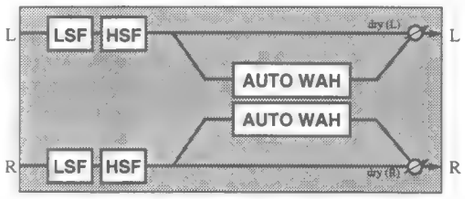

## ● AUTO WAH (Variation, Insertion 1, 2 block)

| No | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | LFO Frequency | 0.00Hz – 39.7Hz | 0-127 | table#1 | |
| 2 | LFO Depth | 0 – 127 | 0-127 | | |
| 3 | Cutoff Frequency Offset | 0 – 127 | 0-127 | | ● |
| 4 | Resonance | 1.0 – 12.0 | 10-120 | | |
| 5 | | | | | |
| 6 | EQ Low Frequency | 32Hz – 2.0kHz | 4-40 | table#3 | |
| 7 | EQ Low Gain | -12 – +12dB | 52-76 | | |
| 8 | EQ High Frequency | 500Hz – 16.0kHz | 28-58 | table#3 | |
| 9 | EQ High Gain | -12 – +12dB | 52-76 | | |
| 10 | Dry/Wet | D63>W – D=W – D<W63 | 1-127 | | |
| 11 | Drive (Variation block) | 0 – 127 | 0-127 | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |

Variation Block

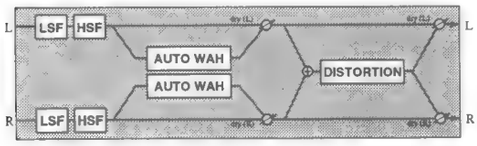



Insertion Block



## ● AUTO WAH+DIST
AUTO WAH+ODRV (Variation block)

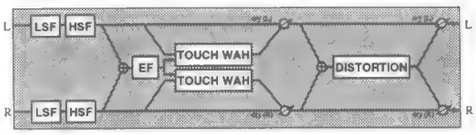
| No | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | LFO Frequency | 0.00Hz – 39.7Hz | 0-127 | table#1 | |
| 2 | LFO Depth | 0 – 127 | 0-127 | | |
| 3 | Cutoff Frequency Offset | 0 – 127 | 0-127 | | ● |
| 4 | Resonance | 1.0 – 12.0 | 10-120 | | |
| 5 | | | | | |
| 6 | EQ Low Frequency | 32Hz – 2.0kHz | 4-40 | table#3 | |
| 7 | EQ Low Gain | -12 – +12dB | 52-76 | | |
| 8 | EQ High Frequency | 500Hz – 16.0kHz | 28-58 | table#3 | |
| 9 | EQ High Gain | -12 – +12dB | 52-76 | | |
| 10 | Dry/Wet | D63>W – D=W – D<W63 | 1-127 | | |
| 11 | Drive | 0 – 127 | 0-127 | | |
| 12 | EQ Low Gain(distortion) | -12 – +12dB | 52-76 | | |
| 13 | EQ Mid Gain(distortion) | -12 – +12dB | 52-76 | | |
| 14 | LPF Cutoff | 1.0kHz – thru | 34-60 | table#3 | |
| 15 | Output Level | 0 – 127 | 0-127 | | |
| 16 | | | | | |



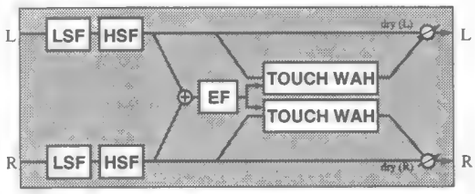

## ● TOUCH WAH 1
(Variation, Insertion 1, 2 block)
TOUCH WAH+DIST (Variation block)

| No | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | Sensitive | 0 – 127 | 0-127 | | |
| 2 | Cutoff Frequency Offset | 0 – 127 | 0-127 | | ● |
| 3 | Resonance | 1.0 – 12.0 | 10-120 | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | EQ Low Frequency | 32Hz – 2.0kHz | 4-40 | table#3 | |
| 7 | EQ Low Gain | -12 – +12dB | 52-76 | | |
| 8 | EQ High Frequency | 500Hz – 16.0kHz | 28-58 | table#3 | |
| 9 | EQ High Gain | -12 – +12dB | 52-76 | | |
| 10 | Dry/Wet | D63>W – D=W – D<W63 | 1-127 | | |
| 11 | Drive (Variation block) | 0 – 127 | 0-127 | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |

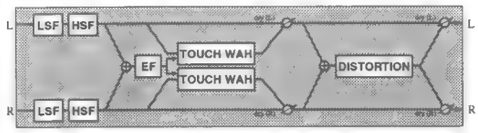
Variation Block: TOUCH WAH 1




Insertion Block: TOUCH WAH 1



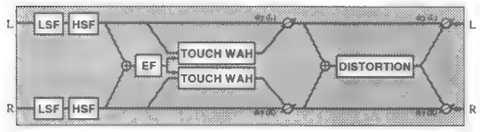

Variation Block: TOUCH WAH+DIST



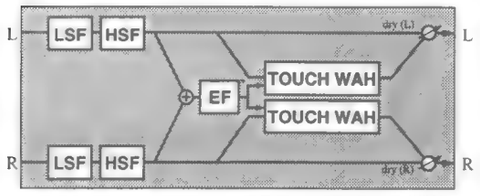
## ● TOUCH WAH 2
(Variation, Insertion 1, 2 block)
TOUCH WAH+ODRV (Variation block)

| No. | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | Sensitive | 0 – 127 | 0-127 | | |
| 2 | Cutoff Frequency Offset | 0 – 127 | 0-127 | | ● |
| 3 | Resonance | 1.0 – 12.0 | 10-120 | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | EQ Low Frequency | 32Hz – 2.0kHz | 4-40 | table#3 | |
| 7 | EQ Low Gain | -12 – +12dB | 52-76 | | |
| 8 | EQ High Frequency | 500Hz – 16.0kHz | 28-58 | table#3 | |
| 9 | EQ High Gain | -12 – +12dB | 52-76 | | |
| 10 | Dry/Wet | D63>W – D=W – D<W63 | 1-127 | | |
| 11 | Drive | 0 – 127 | 0-127 | | |
| 12 | EQ Low Gain(distorbon) | -12 – +12dB | 52-76 | | |
| 13 | EQ Mid Gain(distorbon) | -12 – +12dB | 52-76 | | |
| 14 | LPF Cutoff | 1.0kHz – thru | 34-60 | table#3 | |
| 15 | Output Level | 0 – 127 | 0-127 | | |
| 16 | Release | 10 – 680ms | 52-87 | | |

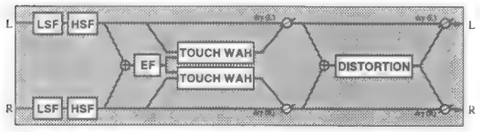
Variation Block: TOUCH WAH 2




Insertion Block: TOUCH WAH 2




Variation Block: TOUCH WAH+ODRV

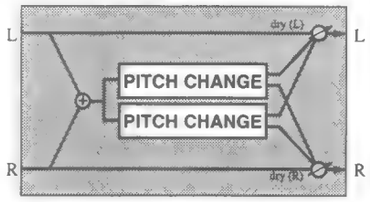



## ● PITCH CHANGE 1 (Variation block)

| No | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | Pitch | -24 – +24 | 40-88 | | |
| 2 | Initial Delay | 0 – 127 | 0-127 | table#7 | |
| 3 | Fine 1 | -50 – +50 | 14-114 | | |
| 4 | Fine 2 | -50 – +50 | 14-114 | | |
| 5 | Feedback Level | -99 – +99% | 1-127 | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | Dry/Wet | D63>W – D=W – D<W63 | 1-127 | | ● |
| 11 | Pan 1 | L63 – R63 | 1-127 | | |
| 12 | Output Level 1 | 0 – 127 | 0-127 | | |
| 13 | Pan 2 | L63 – R63 | 1-127 | | |
| 14 | Output Level 2 | 0 – 127 | 0-127 | | |
| 15 | | | | | |
| 16 | | | | | |

PITCH CHANGE 2 (Variation block)

| No. | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | Pitch | -24 – +24 | 40-88 | | |
| 2 | Initial Delay | 0 – 127 | 0-127 | table#7 | |
| 3 | Fine 1 | -50 – +50cent | 14-114 | | |
| 4 | Fine 2 | -50 – +50cent | 14-114 | | |
| 5 | Feedback Level | -99 – +99% | 1-127 | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | Dry/Wet | D63>W – D=W – D<W63 | 1-127 | | ● |
| 11 | Pan 1 | L63 – R63 | 1-127 | | |
| 12 | Output Level 1 | 0 – 127 | 0-127 | | |
| 13 | Pan 2 | L63 – R63 | 1-127 | | |
| 14 | Output Level 2 | 0 – 127 | 0-127 | | |
| 15 | | | | | |
| 16 | | | | | |



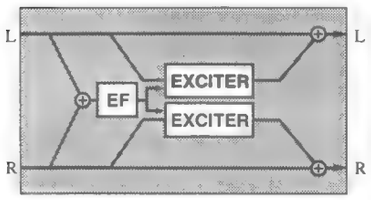
## ● AURAL EXCITER®

(Variation, Insertion 1, 2 block)

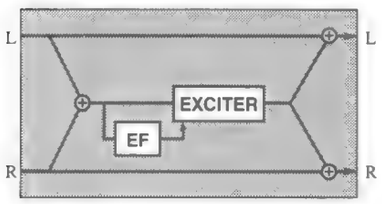
| No | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | HPF Cutoff | 500Hz – 16.0kHz | 28-58 | table#3 | ● |
| 2 | Drive | 0 – 127 | 0-127 | | |
| 3 | Mix Level | 0 – 127 | 0-127 | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |

Aural Exciter® is a registered trademark of Aphex Corporation.

### Variation Block




### Insertion Block

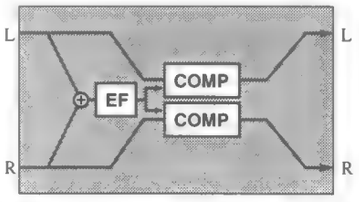



## ● COMPRESSOR

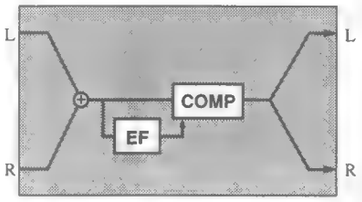
(Variation, Insertion 1, 2 block)

| No | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | Attack | 1 – 40ms | 0-19 | table#8 | |
| 2 | Release | 10 – 680ms | 0-15 | table#9 | |
| 3 | Threshold | -48 – -6dB | 79-121 | | |
| 4 | Ratio | 1.0 – 20.0 | 0-7 | table#10 | |
| 5 | Output Level | 0 – 127 | 0-127 | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |

### Variation Block



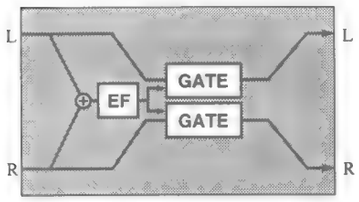

### Insertion Block



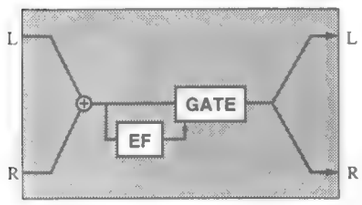
## ● NOISE GATE (Variation, Insertion 1, 2 block)

| No. | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | Attack | 1 – 40ms | 0-19 | table#8 | |
| 2 | Release | 10 – 680ms | 0-15 | table#9 | |
| 3 | Threshold | -72 – -30dB | 55-97 | | |
| 4 | Output Level | 0 – 127 | 0-127 | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |

Variation Block

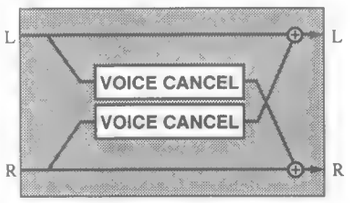



Insertion Block



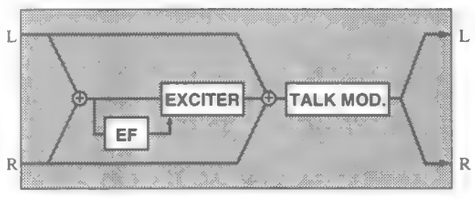

## ● VOICE CANCEL (Variation block)

| No. | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| 11 | Low Adjust | 0 – 26 | 0-26 | | |
| 12 | High Adjust | 0 – 26 | 0-26 | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |




## ● TALKING MODULATOR (Variation block)

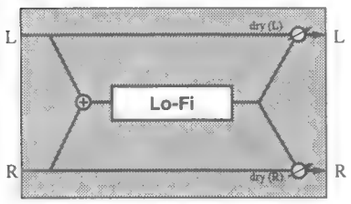
| No. | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | Vowel | a,i,u,e,o | 0-4 | | |
| 2 | Move speed | 1 – 62 | 1-62 | | |
| 3 | Drive | 0 – 127 | 0-127 | | |
| 4 | Output level | 0 – 127 | 0-127 | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |



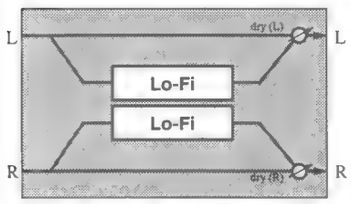
## ● LO-FI (Variation block)

| No. | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | sampling freq control | 44 1kHz – 345Hz | 0-127 | | |
| 2 | word length | 1 – 127 | 1-127 | | |
| 3 | output gain | -6 – +12dB | 0-18 | | |
| 4 | LPF Cutoff | 63Hz – thru | 10-60 | | |
| 5 | filter type | Thru,PowerBass,Radio,Telephone,Clean,Low | 0-5 | | |
| 6 | LPF resonance | 1.0 – 12.0 | 10-120 | | |
| 7 | bit assign | 0 – 6 | 0-6 | | |
| 8 | emphasis | off/on | 0-1 | | |
| 9 | | | | | |
| 10 | Dry/Wet | D63>W – D=W – D<W63 | 1-127 | | ● |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | Input Mode | mono/stereo | 0-1 | | |
| 16 | | | | | |

When input mode="mono"

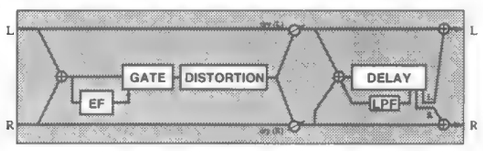



When input mode="stereo"



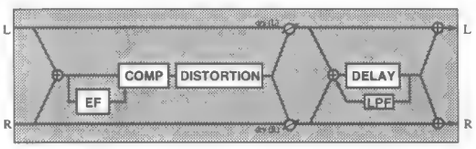

## ● DIST+DELAY (Variation block)
## OVERDRIVE+DELAY (Variation block)

| No. | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | Lch Delay Time | 0.1 – 1486.0ms | 1-14860 | | |
| 2 | Rch Delay Time | 0.1 – 1486.0ms | 1-14860 | | |
| 3 | Delay Feedback Time | 0.1 – 1486.0ms | 1-14860 | | |
| 4 | Delay Feedback Level | -63 – +63 | 1-127 | | |
| 5 | Delay Mix | 0 – 127 | 0-127 | | |
| 6 | Dist Drive | 0 – 127 | 0-127 | | |
| 7 | Dist Output Level | 0 – 127 | 0-127 | | |
| 8 | Dist EQ Low Gain | -12 – +12dB | 52-76 | | |
| 9 | Dist EQ Mid Gain | -12 – +12dB | 52-76 | | |
| 10 | Dry/Wet | D63>W – D=W – D<W63 | 1-127 | | ● |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |



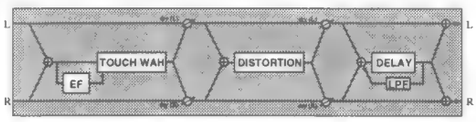

## ● COMP+DIST+DELAY (Variation block)
## COMP+ODRV+DELAY (Variation block)

| No. | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | Delay Time | 0.1 – 1486.0ms | 1-14860 | | |
| 2 | Delay Feedback Level | -63 – +63 | 1-127 | | |
| 3 | Delay Mix | 0 – 127 | 0-127 | | |
| 4 | Dist Drive | 0 – 127 | 0-127 | | |
| 5 | Dist Output Level | 0 – 127 | 0-127 | | |
| 6 | Dist EQ Low Gain | -12 – +12dB | 52-76 | | |
| 7 | Dist EQ Mid Gain | -12 – +12dB | 52-76 | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | Dry/Wet | D63>W – D=W – D<W63 | 1-127 | | ● |
| 11 | Comp Attack | 1ms – 40ms | 0-19 | table#8 | |
| 12 | Comp Release | 10ms – 680ms | 0-15 | table#9 | |
| 13 | Comp. Threshold | -48dB – -6dB | 79-121 | | |
| 14 | Comp Ratio | 1.0 – 20 0 | 0-7 | table#10 | |
| 15 | | | | | |
| 16 | | | | | |




## ● WAH+DIST+DELAY (Variation block)
## WAH+ODRV+DELAY (Variation block)

| No. | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | Delay Time | 0.1 – 1486.0ms | 1-14860 | | |
| 2 | Delay Feedback Level | -63 – +63 | 1-127 | | |
| 3 | Delay Mix | 0 – 127 | 0-127 | | |
| 4 | Dist Drive | 0 – 127 | 0-127 | | |
| 5 | Dist Output Level | 0 – 127 | 0-127 | | |
| 6 | Dist EQ Low Gain | -12 – +12dB | 52-76 | | |
| 7 | Dist EQ Mid Gain | -12 – +12dB | 52-76 | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | Dry/Wet | D63>W – D=W – D<W63 | 1-127 | | ● |
| 11 | Wah Sensitive | 0 – 127 | 0-127 | | |
| 12 | Wah Cutoff Freq Offset | 0 – 127 | 0-127 | | |
| 13 | Wah Resonance | 1.0 – 12.0 | 10-120 | | |
| 14 | Wah Release | 10 – 680ms | 52-87 | | |
| 15 | | | | | |
| 16 | | | | | |



## ● Vocoder Harmony

| No. | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | Mode | 1: no trans, 2: auto trans<br>3: -3 oct trns, 4: -2 oct trns<br>5: -1 oct trns, 6: +1 oct trans<br>7: +2 oct trns, 8: +3 oct trns. | 0-7 | | |
| 2 | Harmony Gender Type | off, auto | 0-1 | | |
| 3 | Lead Gender Type | off, unis, male, fem. | 0-3 | | |
| 4 | Lead Gender Depth | -64 – +63 | 0-127 | | |
| 5 | Lead Pitch Correction | off, on | 0-1 | | |
| 6 | Auto Upper Gender Threshold | 0 – 12 | 0-12 | | |
| 7 | Auto Lower Gender Threshold | 0 – 12 | 0-12 | | |
| 8 | Upper Gender Depth | -64 – +63 | 0-127 | | |
| 9 | Lower Gender Depth | -64 – +63 | 0-127 | | |
| 10 | Lead/Harmony | L63>H – (L=H) – L<H63 | 0-127 | | |
| 11 | Vibrato depth | 0 – 127 | 0-127 | | |
| 12 | Vibrato rate | 0 – 127 | 0-127 | | |
| 13 | Vibrato delay | 0 – 127 | 0-127 | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |

## ● Chordal Harmony

| No. | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | Mode | 1: duet above 2: duet below<br>3: duet abv+b 4: trio above<br>5: trio a&b 6: trio below<br>7: trio a&b+b 8: quar above<br>9: quar a&b 10: quar below | 0-9 | | |
| 2 | Harmony Gender Type | off, auto | 0-1 | | |
| 3 | Lead Gender Type | off, unis, male, fem. | 0-3 | | |
| 4 | Lead Gender Depth | -64 – +63 | 0-127 | | |
| 5 | Lead Pitch Correction | off, on | 0-1 | | |
| 6 | Auto Upper Gender Threshold | 0 – 12 | 0-12 | | |
| 7 | Auto Lower Gender Threshold | 0 – 12 | 0-12 | | |
| 8 | Upper Gender Depth | -64 – +63 | 0-127 | | |
| 9 | Lower Gender Depth | -64 – +63 | 0-127 | | |
| 10 | Lead/Harmony | L63>H – (L=H) – L<H63 | 0-127 | | |
| 11 | Vibrato depth | 0 – 127 | 0-127 | | |
| 12 | Vibrato rate | 0 – 127 | 0-127 | | |
| 13 | Vibrato delay | 0 – 127 | 0-127 | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |

## ● Detune Harmony

| No. | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | Mode | 1: low 2: mid-low<br>3: mid-high 4: high | 0-3 | | |
| 2 | | | | | |
| 3 | Lead Gender Type | off, unis, male, fem. | 0-3 | | |
| 4 | Lead Gender Depth | -64 – +63 | 0-127 | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | Lead/Harmony | L63>H – (L=H) – L<H63 | 1-127 | | |
| 11 | Vibrato depth | 0 – 127 | 0-127 | | |
| 12 | Vibrato rate | 0 – 127 | 0-12 | | |
| 13 | Vibrato delay | 0 – 127 | 0-12 | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |

## ● Chromatic Harmony

| No. | Parameter | Display | Value | See Table | Control |
|---|---|---|---|---|---|
| 1 | Mode | 1: oct below 2: 3rd below<br>3. 5th below 4: unison<br>5: 3rd above 6: 5th above<br>7: oct above | 0-6 | | |
| 2 | Harmony Gender Type | off, auto | 0-1 | | |
| 3 | Lead Gender Type | off, unis, male, fem | 0-3 | | |
| 4 | Lead Gender Depth | -64 – +63 0 – 127 | 64 | | |
| 5 | Lead Pitch Correction | off, on | 0-1 | | |
| 6 | Auto Upper Gender Threshold | 0 – 12 | 0-12 | | |
| 7 | Auto Lower Gender Threshold | 0 – 12 | 0-12 | | |
| 8 | Upper Gender Depth | -64 – +63 | 0-127 | | |
| 9 | Lower Gender Depth | -64 – +63 | 0-127 | | |
| 10 | Lead/Harmony | L63>H – (L=H) – L<H63 | 0-127 | | |
| 11 | Vibrato depth | 0 – 127 | 0-127 | | |
| 12 | Vibrato rate | 0 – 127 | 0-127 | | |
| 13 | Vibrato delay | 0 – 127 | 0-127 | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |

## Explanation of effect parameters

| Parameter name | Effect types in which the parameter exists | Explanation of parameter |
|---|---|---|
| AM Depth | TREMOLO | Depth of volume modulation |
| AMP Type | AMP SIMULATOR | Select the type of amp to be simulated |
| Attack | COMPRESSOR type | Time until the compressor effect begins to apply |
| | NOISE GATE | Time until the gate begins to open |
| Bit Assign | LO-FI | Adjust the word length of the audio data |
| Cch Delay | DELAY L,C,R | Length of the center channel delay |
| Cch Level | DELAY L,C,R | Volume of the center channel |
| Crossover Frequency | 2WAY ROTARY SPEAKER | Crossover frequency between the high-range and low-range speakers |
| Cutoff Frequency Offset | WAH type | Frequency offset value that will control the wah filter |
| Delay Mix | DIST+DELAY,OVERDRIVE+DELAY, COMP+DIST+DELAY,COMP+ODRV+DELAY, WAH+DIST+DELAY,WAH+ODRV+DELAY | Mixing amount of delay sound |
| Delay Offset | CHORUS type | Offset value of delay modulation |
| Delay Time | KARAOKE1,2,3 | Spacing of reflections for karaoke echo |
| | AMBIENCE | Delay length |
| Delay2 Level | ECHO | Volume of second delay |
| Density | REVERB type, EARLY REF type | Density of reflections. Higher values produce closer spacing |
| Depth | REVERB type | Depth of the simulated room |
| Detune | ENSEMBLE DETUNE | Amount of pitch shift |
| Diffusion | REVERB type, EARLY REF type, PHASER | Control the spaciousness |
| Drive | DISTORTION type | Depth of distortion |
| | AURAL EXCITER® | Depth at which the exciter effect is applied |
| | TALKING MODULATION | Depth at which the exciter effect is applied |
| Drive High | 2WAY ROTARY SPEAKER | Depth of modulation caused by rotation of the low-range speaker |
| Drive Low | 2WAY ROTARY SPEAKER | Depth of modulation caused by rotation of the high-range speaker |
| Dry/Wet | All types | Balance between dry sound and effect sound |
| Edge(Clip Curve) | DISTORTION type | Curve of distortion characteristics (sharp(127) distorts suddenly, mild(0) distorts gradually) |
| Emphasis | LO-FI | Modify the character of the high range |
| EQ High Frequency | All types | Frequency at which the EQ will boost/cut the high range |
| EQ High Gain | All types | Gain amount by which the EQ will boost/cut the high range |
| EQ Low Frequency | All types | Frequency at which the EQ will boost/cut the low range |
| EQ Low Gain | All types | Gain amount by which the EQ will boost/cut the low range |
| EQ Mid Frequency | All types | Frequency at which the EQ will boost/cut the mid range |
| EQ Mid Gain | All types | Gain amount by which the EQ will boost/cut the mid range |
| EQ Mid Width | All types | Width of the area boosted/cut by the mid-range EQ |
| Er/Rev Balance | REVERB type | Level balance between the early reflections and the reverberation |
| F/R Depth | AUTO PAN | Depth of front/back panning (valid when PAN Direction=Lturn,Rturn) |
| Feedback Delay | DELAY L,C,R | Length of feedback delay |
| Feedback Delay 1 | DELAY L,R | Length of feedback delay 1 |
| Feedback Delay 2 | DELAY L,R | Length of feedback delay 2 |
| Feedback Level | REVERB type | Feedback amount of initial delay |
| | DELAY type,EARLY REF type,PITCH CHANGE type | Feedback amount |
| | KARAOKE type | Setting for repeated reflections |
| | CHORUS type, FLANGER type | Level at which delay output is again returned to the input (negative values invert the phase) |
| | PHASER type | Level at which phaser output is again returned to the input (negative values insert the phase) |
| Filter Type | LO-FI | Select the type of tonal effect |
| Fine 1 | PITCH CHANGE type | Fine adjustment to pitch of first sound |
| Fine 2 | PITCH CHANGE type | Fine adjustment to pitch of second sound |
| Height | REVERB type | Height of simulated room |
| High Adjust | VOICE CANCELAR | Adjust the upper limit of the mid-frequency range that will be attenuated |
| High Damp | REVERB type,DELAY type,EARLY REF type | Attenuation of the high frequency range (lower values will cause the high range to decay more rapidly) |
| HPF Cutoff | REVERB type,EARLY REF type,KARAOKE type,AURAL EXCITER® | Frequency at which the high pass filter will cut the low range |
| Initial Delay | REVERB type | Delay time until the early reflections |
| | EARLY REF type | Delay length until ER (GateReverb) sounds |
| | PITCH CHANGE type | Delay length |
| Input Mode | All types | Mono/stereo switch for input |
| Input Select | CROSS DELAY | Input select |
| L/R Depth | AUTO PAN | Depth of left/right panning |
| L->R Delay | CROSS DELAY | Delay time from left (input) to right (output) |
| Lch Delay | DELAY type | Length of left channel delay |
| Lch Delay1 | ECHO | Length of first left channel delay |
| Lch Delay2 | ECHO | Length of second left channel delay |
| Lch Feedback Level | ECHO | Amount of left channel feedback |
| Lch Init Delay | ENSEMBLE DETUNE | Length of left channel delay |
| LFO Depth | CHORUS type,FLANGER type,SYMPHONIC | Depth of delay modulation |
| | ROTARY SPEAKER | Depth of modulation caused by speaker rotation |
| | PHASER type | Depth of phase modulation |
| | WAH type | Depth at which the wah filter will be controlled |
| LFO Frequency | CHORUS type,FLANGER type,SYMPHONIC | Frequency of delay modulation |
| | ROTARY SPEAKER | Frequency at which the speaker will rotate |
| | TREMOLO | Modulation frequency |
| | AUTO PAN | Autopan frequency |
| | PHASER type | Phase modulation frequency |
| | WAH type | Frequency at which wah filter will be controlled |

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| | | |
|---|---|---|
| LFO Phase Difference | PHASER type,FLANGER type | L/R phase difference for modulation waveform (0 deg (=64) is no phase difference) |
| Liveness | EARLY REF type | ER decay. Lower values cause faster decay. |
| Low Adjust | VOICE CANCEL | Adjust the lower frequency limit of the mid-range that will be attenuated |
| Low/High | 2WAY ROTARY SPEAKER | Volume balance between the high-range and low-range speakers |
| LPF Cutoff | All types | Frequency at which the low pass filter will cut the high frequency range |
| LPF Resonance | LO-FI | Add character to the low pass filter of the input |
| Mic L-R Angle | 2WAY ROTARY SPEAKER | L/R angle of the mic that picks up the output |
| Mix Level | AURAL EXCITER® | Level of the effect sound that is mixed into the dry sound |
| Move Speed | TALKING MODULATOR | Time over which the sound specified by Vowel is reached |
| Output Gain | LO-FI | Output gain |
| Output Level | All types | Output level |
| Output Level 1 | PITCH CHANGE type | Output level for first unit |
| Output Level 2 | PITCH CHANGE type | Output level for second unit |
| Output Phase | AMBIENCE | Swap phase of the effect sound between L/R |
| Pan 1 | PITCH CHANGE type | Pan of first unit |
| Pan 2 | PITCH CHANGE type | Pan of second unit |
| PAN Direction | AUTO PAN | Autopan type (L<->R is sine wave, L/R is square wave) |
| Phase Shift Offset | PHASER type | Offset value for phase modulation |
| Pitch | PITCH CHANGE type | Pitch setting in semitones |
| PM Depth | TREMOLO | Depth of delay modulation |
| R->L Delay | CROSS DELAY | Delay time from right (input) to left (output) |
| Ratio | COMPRESSOR type | Compression ratio of the compressor |
| Rch Delay | DELAY type | Length of right channel delay |
| Rch Delay1 | ECHO | Length of first right channel delay |
| Rch Delay2 | ECHO | Length of second right channel delay |
| Rch Feedback Level | ECHO | Amount of right channel feedback |
| Rch Init Delay | ENSEMBLE DETUNE | Length of right channel delay |
| Release | COMPRESSOR type<br>NOISE GATE<br>TOUCH WAH2, TOUCH WAH+ODRV | Time until the sound is released from the compressor effect<br>Time until the gate closes<br>Time until the center frequency of the wah filter returns to normal |
| Resonance | WAH type | Bandwidth of the wah filter |
| Rev Delay | REVERB type | Delay time between the early reflections and the reverberation |
| Reverb Time | REVERB type | Length of reverb |
| Room Size | EARLY REF type | Size of room. Increasing this value will lengthen ER. |
| Rotor Speed | 2WAY ROTARY SPEAKER | Frequency at which the speaker rotates |
| Sampling Freq Control | LO-FI | Sampling frequency control |
| Sensitive | WAH type | Sensitivity with which the wah filter will change in response to changes in the input |
| Stage | PHASER type | Number of steps for the phase shifter |
| Threshold | COMPRESSOR type<br>NOISE GATE | Input level at which compression will begin<br>Input level at which the gate will begin to open |
| Type | EARLY REF type | Type selection |
| Vowel | TALKING MODULATOR | Vowel selection |
| Wah Release | WAH+DIST+DELAY,WAH+ODRV+DELAY | Time until the center frequency of the wah filter returns to normal |
| Wall Vary | REVERB type | Condition of the walls of the simulated room (higher values produce more random reflections) |
| Width | REVERB type | Width of the simulated room |
| Word Length | LO-FI | Specify the roughness of the sound |

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Additional note: In the preceding pages, indication of effect types such as REVERB-type respectively include the following effect types.

| | |
|---|---|
| CHORUS type | CHORUS1,CHORUS2,CHORUS3,CHORUS4,CELESTE1,CELESTE2,CELESTE3,CELESTE4 |
| COMPRESSOR type | COMPRESSOR,COMP+DIST, COMP+DIST+DELAY, COMP+OVERDRIVE+DELAY |
| DELAY type | DELAY L,C,R, DELAY L,R, ECHO, CROSS DELAY, DIST+DELAY, OVERDRIVE+DELAY, COMP+DIST+DELAY, COMP+DIST+DELAY, COMP+OVERDRIVE+DELAY, WAH+DIST+DELAY, WAH+OVERDRIVE+DELAY |
| DISTORTION type | DISTORTION, OVERDRIVE, AMP SIMULATOR, AUTO WAH+DIST, AUTO WAH+ODRV, TOUCH WAH+DIST, TOUCH WAH+ODRV, COMP+DIST, DIST+DELAY, OVERDRIVE+DELAY, COMP+DIST+DELAY, COMP+DIST+DELAY, COMP+OVERDRIVE+DELAY, WAH+DIST+DELAY, WAH+OVERDRIVE+DELAY |
| EARLY REF type | EARLY REF1, EARLY REF2, GATE REVERB, REVERSE GATE |
| FLANGER type | FLANGER1,FLANGER2, FLANGER3 |
| KARAOKE type | KARAOKE1, KARAOKE2, KARAOKE3 |
| PHASER type | PHASER1, PHASER2 |
| PITCH CHANGE type | PITCH CHANGE1, PITCH CHANGE2 |
| REVERB type | HALL1,HALL2,ROOM1,ROOM2,ROOM3,STAGE1,STAGE2,PLATE, WHITE ROOM,TUNNEL,CANYON,BASEMENT |
| WAH type | AUTO WAH, AUTO WAH+DIST, AUTO WAH+ODRV, TOUCH WAH1, TOUCH WAH2, TOUCH WAH+DIST, TOUCH WAH+ODRV, WAH+DIST+DELAY, WAH+OVERDRIVE+DELAY |

# 5. Effect Data Assign Table

Table#1
LFO Frequency

| Data | Value | Data | Value | Data | Value | Data | Value |
|---|---|---|---|---|---|---|---|
| 0 | 0.00 | 32 | 1.34 | 64 | 2.69 | 96 | 8.41 |
| 1 | 0.08 | 33 | 1.43 | 65 | 2.77 | 97 | 8.74 |
| 2 | 0.08 | 34 | 1.43 | 66 | 2.86 | 98 | 9.08 |
| 3 | 0.16 | 35 | 1.51 | 67 | 2.94 | 99 | 9.42 |
| 4 | 0.16 | 36 | 1.51 | 68 | 3.02 | 100 | 9.75 |
| 5 | 0.25 | 37 | 1.59 | 69 | 3.11 | 101 | 10.0 |
| 6 | 0.25 | 38 | 1.59 | 70 | 3.19 | 102 | 10.7 |
| 7 | 0.33 | 39 | 1.68 | 71 | 3.28 | 103 | 11.4 |
| 8 | 0.33 | 40 | 1.68 | 72 | 3.36 | 104 | 12.1 |
| 9 | 0.42 | 41 | 1.76 | 73 | 3.44 | 105 | 12.7 |
| 10 | 0.42 | 42 | 1.76 | 74 | 3.53 | 106 | 13.4 |
| 11 | 0.50 | 43 | 1.85 | 75 | 3.61 | 107 | 14.1 |
| 12 | 0.50 | 44 | 1.85 | 76 | 3.70 | 108 | 14.8 |
| 13 | 0.58 | 45 | 1.93 | 77 | 3.86 | 109 | 15.4 |
| 14 | 0.58 | 46 | 1.93 | 78 | 4.03 | 110 | 16.1 |
| 15 | 0.67 | 47 | 2.01 | 79 | 4.20 | 111 | 16.8 |
| 16 | 0.67 | 48 | 2.01 | 80 | 4.37 | 112 | 17.4 |
| 17 | 0.75 | 49 | 2.10 | 81 | 4.54 | 113 | 18.1 |
| 18 | 0.75 | 50 | 2.10 | 82 | 4.71 | 114 | 19.5 |
| 19 | 0.84 | 51 | 2.18 | 83 | 4.87 | 115 | 20.8 |
| 20 | 0.84 | 52 | 2.18 | 84 | 5.04 | 116 | 22.2 |
| 21 | 0.92 | 53 | 2.27 | 85 | 5.21 | 117 | 23.5 |
| 22 | 0.92 | 54 | 2.27 | 86 | 5.38 | 118 | 24.8 |
| 23 | 1.00 | 55 | 2.35 | 87 | 5.55 | 119 | 26.2 |
| 24 | 1.00 | 56 | 2.35 | 88 | 5.72 | 120 | 27.5 |
| 25 | 1.09 | 57 | 2.43 | 89 | 6.05 | 121 | 28.9 |
| 26 | 1.09 | 58 | 2.43 | 90 | 6.39 | 122 | 30.2 |
| 27 | 1.17 | 59 | 2.52 | 91 | 6.72 | 123 | 31.6 |
| 28 | 1.17 | 60 | 2.52 | 92 | 7.06 | 124 | 32.9 |
| 29 | 1.26 | 61 | 2.60 | 93 | 7.40 | 125 | 34.3 |
| 30 | 1.26 | 62 | 2.60 | 94 | 7.73 | 126 | 37.0 |
| 31 | 1.34 | 63 | 2.69 | 95 | 8.07 | 127 | 39.7 |

Table#2
Modulation Delay Offset

| Data | Value | Data | Value | Data | Value | Data | Value |
|---|---|---|---|---|---|---|---|
| 0 | 0.0 | 32 | 3.2 | 64 | 6.4 | 96 | 9.6 |
| 1 | 0.1 | 33 | 3.3 | 65 | 6.5 | 97 | 9.7 |
| 2 | 0.2 | 34 | 3.4 | 66 | 6.6 | 98 | 9.8 |
| 3 | 0.3 | 35 | 3.5 | 67 | 6.7 | 99 | 9.9 |
| 4 | 0.4 | 36 | 3.6 | 68 | 6.8 | 100 | 10.0 |
| 5 | 0.5 | 37 | 3.7 | 69 | 6.9 | 101 | 11.1 |
| 6 | 0.6 | 38 | 3.8 | 70 | 7.0 | 102 | 12.2 |
| 7 | 0.7 | 39 | 3.9 | 71 | 7.1 | 103 | 13.3 |
| 8 | 0.8 | 40 | 4.0 | 72 | 7.2 | 104 | 14.4 |
| 9 | 0.9 | 41 | 4.1 | 73 | 7.3 | 105 | 15.5 |
| 10 | 1.0 | 42 | 4.2 | 74 | 7.4 | 106 | 17.1 |
| 11 | 1.1 | 43 | 4.3 | 75 | 7.5 | 107 | 18.6 |
| 12 | 1.2 | 44 | 4.4 | 76 | 7.6 | 108 | 20.2 |
| 13 | 1.3 | 45 | 4.5 | 77 | 7.7 | 109 | 21.8 |
| 14 | 1.4 | 46 | 4.6 | 78 | 7.8 | 110 | 23.3 |
| 15 | 1.5 | 47 | 4.7 | 79 | 7.9 | 111 | 24.9 |
| 16 | 1.6 | 48 | 4.8 | 80 | 8.0 | 112 | 26.5 |
| 17 | 1.7 | 49 | 4.9 | 81 | 8.1 | 113 | 28.0 |
| 18 | 1.8 | 50 | 5.0 | 82 | 8.2 | 114 | 29.6 |
| 19 | 1.9 | 51 | 5.1 | 83 | 8.3 | 115 | 31.2 |
| 20 | 2.0 | 52 | 5.2 | 84 | 8.4 | 116 | 32.8 |
| 21 | 2.1 | 53 | 5.3 | 85 | 8.5 | 117 | 34.3 |
| 22 | 2.2 | 54 | 5.4 | 86 | 8.6 | 118 | 35.9 |
| 23 | 2.3 | 55 | 5.5 | 87 | 8.7 | 119 | 37.5 |
| 24 | 2.4 | 56 | 5.6 | 88 | 8.8 | 120 | 39.0 |
| 25 | 2.5 | 57 | 5.7 | 89 | 8.9 | 121 | 40.6 |
| 26 | 2.6 | 58 | 5.8 | 90 | 9.0 | 122 | 42.2 |
| 27 | 2.7 | 59 | 5.9 | 91 | 9.1 | 123 | 43.7 |
| 28 | 2.8 | 60 | 6.0 | 92 | 9.2 | 124 | 45.3 |
| 29 | 2.9 | 61 | 6.1 | 93 | 9.3 | 125 | 46.9 |
| 30 | 3.0 | 62 | 6.2 | 94 | 9.4 | 126 | 48.4 |
| 31 | 3.1 | 63 | 6.3 | 95 | 9.5 | 127 | 50.0 |

Table#3
EQ Frequency

| Data | Value | Data | Value |
|---|---|---|---|
| 0 | THRU(20) | 32 | 800 |
| 1 | 22 | 33 | 900 |
| 2 | 25 | 34 | 1.0k |
| 3 | 28 | 35 | 1.1k |
| 4 | 32 | 36 | 1.2k |
| 5 | 36 | 37 | 1.4k |
| 6 | 40 | 38 | 1.6k |
| 7 | 45 | 39 | 1.8k |
| 8 | 50 | 40 | 2.0k |
| 9 | 56 | 41 | 2.2k |
| 10 | 63 | 42 | 2.5k |
| 11 | 70 | 43 | 2.8k |
| 12 | 80 | 44 | 3.2k |
| 13 | 90 | 45 | 3.6k |
| 14 | 100 | 46 | 4.0k |
| 15 | 110 | 47 | 4.5k |
| 16 | 125 | 48 | 5.0k |
| 17 | 140 | 49 | 5.6k |
| 18 | 160 | 50 | 6.3k |
| 19 | 180 | 51 | 7.0k |
| 20 | 200 | 52 | 8.0k |
| 21 | 225 | 53 | 9.0k |
| 22 | 250 | 54 | 10.0k |
| 23 | 280 | 55 | 11.0k |
| 24 | 315 | 56 | 12.0k |
| 25 | 355 | 57 | 14.0k |
| 26 | 400 | 58 | 16.0k |
| 27 | 450 | 59 | 18.0k |
| 28 | 500 | 60 | THRU(20.0k) |
| 29 | 560 | | |
| 30 | 630 | | |
| 31 | 700 | | |

Table#4
Reverb time

| Data | Value | Data | Value | Data | Value |
|---|---|---|---|---|---|
| 0 | 0.3 | 32 | 3.5 | 64 | 17.0 |
| 1 | 0.4 | 33 | 3.6 | 65 | 18.0 |
| 2 | 0.5 | 34 | 3.7 | 66 | 19.0 |
| 3 | 0.6 | 35 | 3.8 | 67 | 20.0 |
| 4 | 0.7 | 36 | 3.9 | 68 | 25.0 |
| 5 | 0.8 | 37 | 4.0 | 69 | 30.0 |
| 6 | 0.9 | 38 | 4.1 | | |
| 7 | 1.0 | 39 | 4.2 | | |
| 8 | 1.1 | 40 | 4.3 | | |
| 9 | 1.2 | 41 | 4.4 | | |
| 10 | 1.3 | 42 | 4.5 | | |
| 11 | 1.4 | 43 | 4.6 | | |
| 12 | 1.5 | 44 | 4.7 | | |
| 13 | 1.6 | 45 | 4.8 | | |
| 14 | 1.7 | 46 | 4.9 | | |
| 15 | 1.8 | 47 | 5.0 | | |
| 16 | 1.9 | 48 | 5.5 | | |
| 17 | 2.0 | 49 | 6.0 | | |
| 18 | 2.1 | 50 | 6.5 | | |
| 19 | 2.2 | 51 | 7.0 | | |
| 20 | 2.3 | 52 | 7.5 | | |
| 21 | 2.4 | 53 | 8.0 | | |
| 22 | 2.5 | 54 | 8.5 | | |
| 23 | 2.6 | 55 | 9.0 | | |
| 24 | 2.7 | 56 | 9.5 | | |
| 25 | 2.8 | 57 | 10.0 | | |
| 26 | 2.9 | 58 | 11.0 | | |
| 27 | 3.0 | 59 | 12.0 | | |
| 28 | 3.1 | 60 | 13.0 | | |
| 29 | 3.2 | 61 | 14.0 | | |
| 30 | 3.3 | 62 | 15.0 | | |
| 31 | 3.4 | 63 | 16.0 | | |

Table#5
Delay Time(200.0ms)

| Data | Value | Data | Value | Data | Value | Data | Value |
|---|---|---|---|---|---|---|---|
| 0 | 0.1 | 32 | 50.5 | 64 | 100.8 | 96 | 151.2 |
| 1 | 1.7 | 33 | 52.0 | 65 | 102.4 | 97 | 152.8 |
| 2 | 3.2 | 34 | 53.6 | 66 | 104.0 | 98 | 154.4 |
| 3 | 4.8 | 35 | 55.2 | 67 | 105.6 | 99 | 155.9 |
| 4 | 6.4 | 36 | 56.8 | 68 | 107.1 | 100 | 157.5 |
| 5 | 8.0 | 37 | 58.3 | 69 | 108.7 | 101 | 159.1 |
| 6 | 9.5 | 38 | 59.9 | 70 | 110.3 | 102 | 160.6 |
| 7 | 11.1 | 39 | 61.5 | 71 | 111.9 | 103 | 162.2 |
| 8 | 12.7 | 40 | 63.1 | 72 | 113.4 | 104 | 163.8 |
| 9 | 14.3 | 41 | 64.6 | 73 | 115.0 | 105 | 165.4 |
| 10 | 15.8 | 42 | 66.2 | 74 | 116.6 | 106 | 166.9 |
| 11 | 17.4 | 43 | 67.8 | 75 | 118.2 | 107 | 168.5 |
| 12 | 19.0 | 44 | 69.4 | 76 | 119.7 | 108 | 170.1 |
| 13 | 20.6 | 45 | 70.9 | 77 | 121.3 | 109 | 171.7 |
| 14 | 22.1 | 46 | 72.5 | 78 | 122.9 | 110 | 173.2 |
| 15 | 23.7 | 47 | 74.1 | 79 | 124.4 | 111 | 174.8 |
| 16 | 25.3 | 48 | 75.7 | 80 | 126.0 | 112 | 176.4 |
| 17 | 26.9 | 49 | 77.2 | 81 | 127.6 | 113 | 178.0 |
| 18 | 28.4 | 50 | 78.8 | 82 | 129.2 | 114 | 179.5 |
| 19 | 30.0 | 51 | 80.4 | 83 | 130.7 | 115 | 181.1 |
| 20 | 31.6 | 52 | 81.9 | 84 | 132.3 | 116 | 182.7 |
| 21 | 33.2 | 53 | 83.5 | 85 | 133.9 | 117 | 184.3 |
| 22 | 34.7 | 54 | 85.1 | 86 | 135.5 | 118 | 185.8 |
| 23 | 36.3 | 55 | 86.7 | 87 | 137.0 | 119 | 187.4 |
| 24 | 37.9 | 56 | 88.2 | 88 | 138.6 | 120 | 189.0 |
| 25 | 39.5 | 57 | 89.8 | 89 | 140.2 | 121 | 190.6 |
| 26 | 41.0 | 58 | 91.4 | 90 | 141.8 | 122 | 192.1 |
| 27 | 42.6 | 59 | 93.0 | 91 | 143.3 | 123 | 193.7 |
| 28 | 44.2 | 60 | 94.5 | 92 | 144.9 | 124 | 195.3 |
| 29 | 45.7 | 61 | 96.1 | 93 | 146.5 | 125 | 196.9 |
| 30 | 47.3 | 62 | 97.7 | 94 | 148.1 | 126 | 198.4 |
| 31 | 48.9 | 63 | 99.3 | 95 | 149.6 | 127 | 200.0 |

Table#6
Room Size

| Data | Value | Data | Value |
|---|---|---|---|
| 0 | 0.1 | 32 | 5.1 |
| 1 | 0.3 | 33 | 5.3 |
| 2 | 0.4 | 34 | 5.4 |
| 3 | 0.6 | 35 | 5.6 |
| 4 | 0.7 | 36 | 5.7 |
| 5 | 0.9 | 37 | 5.9 |
| 6 | 1.0 | 38 | 6.1 |
| 7 | 1.2 | 39 | 6.2 |
| 8 | 1.4 | 40 | 6.4 |
| 9 | 1.5 | 41 | 6.5 |
| 10 | 1.7 | 42 | 6.7 |
| 11 | 1.8 | 43 | 6.8 |
| 12 | 2.0 | 44 | 7.0 |
| 13 | 2.1 | | |
| 14 | 2.3 | | |
| 15 | 2.5 | | |
| 16 | 2.6 | | |
| 17 | 2.8 | | |
| 18 | 2.9 | | |
| 19 | 3.1 | | |
| 20 | 3.2 | | |
| 21 | 3.4 | | |
| 22 | 3.5 | | |
| 23 | 3.7 | | |
| 24 | 3.9 | | |
| 25 | 4.0 | | |
| 26 | 4.2 | | |
| 27 | 4.3 | | |
| 28 | 4.5 | | |
| 29 | 4.6 | | |
| 30 | 4.8 | | |
| 31 | 5.0 | | |

Table#7
Delay Time (400.0ms)

| Data | Value | Data | Value | Data | Value | Data | Value |
|---|---|---|---|---|---|---|---|
| 0 | 0.1 | 32 | 100.9 | 64 | 201.6 | 96 | 302.4 |
| 1 | 3.2 | 33 | 104.0 | 65 | 204.8 | 97 | 305.5 |
| 2 | 6.4 | 34 | 107.2 | 66 | 207.9 | 98 | 308.7 |
| 3 | 9.5 | 35 | 110.3 | 67 | 211.1 | 99 | 311.8 |
| 4 | 12.7 | 36 | 113.5 | 68 | 214.2 | 100 | 315.0 |
| 5 | 15.8 | 37 | 116.6 | 69 | 217.4 | 101 | 318.1 |
| 6 | 19.0 | 38 | 119.8 | 70 | 220.5 | 102 | 321.3 |
| 7 | 22.1 | 39 | 122.9 | 71 | 223.7 | 103 | 324.4 |
| 8 | 25.3 | 40 | 126.1 | 72 | 226.8 | 104 | 327.6 |
| 9 | 28.4 | 41 | 129.2 | 73 | 230.0 | 105 | 330.7 |
| 10 | 31.6 | 42 | 132.4 | 74 | 233.1 | 106 | 333.9 |
| 11 | 34.7 | 43 | 135.5 | 75 | 236.3 | 107 | 337.0 |
| 12 | 37.9 | 44 | 138.6 | 76 | 239.4 | 108 | 340.2 |
| 13 | 41.0 | 45 | 141.8 | 77 | 242.6 | 109 | 343.3 |
| 14 | 44.2 | 46 | 144.9 | 78 | 245.7 | 110 | 346.5 |
| 15 | 47.3 | 47 | 148.1 | 79 | 248.9 | 111 | 349.6 |
| 16 | 50.5 | 48 | 151.2 | 80 | 252.0 | 112 | 352.8 |
| 17 | 53.6 | 49 | 154.4 | 81 | 255.2 | 113 | 355.9 |
| 18 | 56.8 | 50 | 157.5 | 82 | 258.3 | 114 | 359.1 |
| 19 | 59.9 | 51 | 160.7 | 83 | 261.5 | 115 | 362.2 |
| 20 | 63.1 | 52 | 163.8 | 84 | 264.6 | 116 | 365.4 |
| 21 | 66.2 | 53 | 167.0 | 85 | 267.7 | 117 | 368.5 |
| 22 | 69.4 | 54 | 170.1 | 86 | 270.9 | 118 | 371.7 |
| 23 | 72.5 | 55 | 173.3 | 87 | 274.0 | 119 | 374.8 |
| 24 | 75.7 | 56 | 176.4 | 88 | 277.2 | 120 | 378.0 |
| 25 | 78.8 | 57 | 179.6 | 89 | 280.3 | 121 | 381.1 |
| 26 | 82.0 | 58 | 182.7 | 90 | 283.5 | 122 | 384.3 |
| 27 | 85.1 | 59 | 185.9 | 91 | 286.6 | 123 | 387.4 |
| 28 | 88.3 | 60 | 189.0 | 92 | 289.8 | 124 | 390.6 |
| 29 | 91.4 | 61 | 192.2 | 93 | 292.9 | 125 | 393.7 |
| 30 | 94.6 | 62 | 195.3 | 94 | 296.1 | 126 | 396.9 |
| 31 | 97.7 | 63 | 198.5 | 95 | 299.2 | 127 | 400.0 |

Table#11
Reverb Width; Depth; Height

| Data | Value | Data | Value | Data | Value | Data | Value |
|---|---|---|---|---|---|---|---|
| 0 | 0.5 | 32 | 8.8 | 64 | 17.6 | 96 | 27.5 |
| 1 | 0.8 | 33 | 9.1 | 65 | 17.9 | 97 | 27.8 |
| 2 | 1.0 | 34 | 9.4 | 66 | 18.2 | 98 | 28.1 |
| 3 | 1.3 | 35 | 9.6 | 67 | 18.5 | 99 | 28.5 |
| 4 | 1.5 | 36 | 9.9 | 68 | 18.8 | 100 | 28.8 |
| 5 | 1.8 | 37 | 10.2 | 69 | 19.1 | 101 | 29.2 |
| 6 | 2.0 | 38 | 10.4 | 70 | 19.4 | 102 | 29.5 |
| 7 | 2.3 | 39 | 10.7 | 71 | 19.7 | 103 | 29.9 |
| 8 | 2.6 | 40 | 11.0 | 72 | 20.0 | 104 | 30.2 |
| 9 | 2.8 | 41 | 11.2 | 73 | 20.2 | | |
| 10 | 3.1 | 42 | 11.5 | 74 | 20.5 | | |
| 11 | 3.3 | 43 | 11.8 | 75 | 20.8 | | |
| 12 | 3.6 | 44 | 12.1 | 76 | 21.1 | | |
| 13 | 3.9 | 45 | 12.3 | 77 | 21.4 | | |
| 14 | 4.1 | 46 | 12.6 | 78 | 21.7 | | |
| 15 | 4.4 | 47 | 12.9 | 79 | 22.0 | | |
| 16 | 4.6 | 48 | 13.1 | 80 | 22.4 | | |
| 17 | 4.9 | 49 | 13.4 | 81 | 22.7 | | |
| 18 | 5.2 | 50 | 13.7 | 82 | 23.0 | | |
| 19 | 5.4 | 51 | 14.0 | 83 | 23.3 | | |
| 20 | 5.7 | 52 | 14.2 | 84 | 23.6 | | |
| 21 | 5.9 | 53 | 14.5 | 85 | 23.9 | | |
| 22 | 6.2 | 54 | 14.8 | 86 | 24.2 | | |
| 23 | 6.5 | 55 | 15.1 | 87 | 24.5 | | |
| 24 | 6.7 | 56 | 15.4 | 88 | 24.9 | | |
| 25 | 7.0 | 57 | 15.6 | 89 | 25.2 | | |
| 26 | 7.2 | 58 | 15.9 | 90 | 25.5 | | |
| 27 | 7.5 | 59 | 16.2 | 91 | 25.8 | | |
| 28 | 7.8 | 60 | 16.5 | 92 | 26.1 | | |
| 29 | 8.0 | 61 | 16.8 | 93 | 26.5 | | |
| 30 | 8.3 | 62 | 17.1 | 94 | 26.8 | | |
| 31 | 8.6 | 63 | 17.3 | 95 | 27.1 | | |

Table#8
Compressor Attack Time

| Data | Value |
|---|---|
| 0 | 1 |
| 1 | 2 |
| 2 | 3 |
| 3 | 4 |
| 4 | 5 |
| 5 | 6 |
| 6 | 7 |
| 7 | 8 |
| 8 | 9 |
| 9 | 10 |
| 10 | 12 |
| 11 | 14 |
| 12 | 16 |
| 13 | 18 |
| 14 | 20 |
| 15 | 23 |
| 16 | 26 |
| 17 | 30 |
| 18 | 35 |
| 19 | 40 |

Table#9
Compressor Release Time

| Data | Value |
|---|---|
| 0 | 10 |
| 1 | 15 |
| 2 | 25 |
| 3 | 35 |
| 4 | 45 |
| 5 | 55 |
| 6 | 65 |
| 7 | 75 |
| 8 | 85 |
| 9 | 100 |
| 10 | 115 |
| 11 | 140 |
| 12 | 170 |
| 13 | 230 |
| 14 | 340 |
| 15 | 680 |

Table#10
Compressor Ratio

| Data | Value |
|---|---|
| 0 | 1.0 |
| 1 | 1.5 |
| 2 | 2.0 |
| 3 | 3.0 |
| 4 | 5.0 |
| 5 | 7.0 |
| 6 | 10.0 |
| 7 | 20.0 |

# ■ MIDI DATA FORMAT (MIDIデータフォーマット)

## 1. Channel messages

### 1.1 Note on/note off

These messages convey keyboard performance data.
Note-on is transmitted when a note is pressed, and note-off is transmitted when a note is released.
These messages contain a "note number" which indicates the key that was played, and a "velocity" which indicates how strongly it was played.
When a note-on of velocity "0" is received, it has the same effect as a note-off.
Range of note numbers received = 0 (C-2)...60 (C3)...127 (G8)
Velocity range = 1...127 (Velocity is received only for note-on)
When the Multi Part parameter "Rcv NOTE MESSAGE" = OFF, that part will not receive these messages.
For a drum part*, key-off is not received if the DrumSetup parameter Rcv NOTE OFF = OFF.
For a drum part, key-on is not received if the DrumSetup parameter Rcv NOTE ON = OFF.

* Drum Part indicates that the Multi Part parameter PART MODE is "set to DRUM or DRUMS1...4."

### 1.2 Control changes

These messages control volume or pan etc.

Their functions are differentiated by the control number (Ctrl#).
If the Multi Part parameter Rcv CONTROL CHANGE = OFF, that part will not receive control changes.

#### 1.2.1 Bank Select

This voice selects the voice bank.
The voice bank is selected by the combination of two control change messages: MSB and LSB.
The function of the MSB and LSB will differ depending on the sound module mode.
In the case of "XG," the MSB value will specify the major division of voices, and the LSB value will specify the detailed division.
In the case of "TG300B," the LSB value is fixed, and only the MSB value will specify the detailed voice division.
In the case of "C/M," Bank Select is not received.

| Control# | Parameter | Data Range |
|---|---|---|
| 0 | Bank Select MSB | 0...127 |
| 32 | Bank Select LSB | 0...127 |

The Bank Select data will be processed only after a Program Change is received, and then voice bank will change at that time.
If you wish to change the voice bank as well as the voice, you must transmit Bank Select and Program Change messages as a set, in the order of Bank Select MSB, LSB, and Program Change.

#### 1.2.2 Modulation

This message is used primarily to control the depth of vibrato, but the depth of the following 7 types of effect can be controlled.
The effect of this message can be changed by the following parameters.

• Multi Part Parameter
1. MW PITCH CONTROL
2. MW FILTER CONTROL
3. MW AMPLITUDE CONTROL
4. MW LFO PMOD DEPTH
5. MW LFO FMOD DEPTH
6. MW LFO AMOD DEPTH
• Effect1 Parameter
7. MW VARIATION CONTROL DEPTH
(Valid when Variation Effect is assigned to a part as Insertion)
By default, an LFO Pitch Modulation (PMOD) effect will apply.

| Control# | Parameter | Data Range |
|---|---|---|
| 1 | Modulation | 0...127 |

If the Multi Part parameter Rcv MODULATION = OFF, that part will not receive Modulation.
If the receive channel is a drum part, effects 5 and 6 will not apply.

#### 1.2.3 Breath Controller

| Control# | Parameter | Data Range |
|---|---|---|
| 2 | Breath Controller | 0...127 |

Valid only when a VL sound is selected.

#### 1.2.4 Foot Controller

| Control# | Parameter | Data Range |
|---|---|---|
| 4 | Foot Controller | 0...127 |

Valid only when a VL sound is selected.

#### 1.2.5 Portamento Time

This message controls the degree of Portamento (refer to 1.2.11).

| Control# | Parameter | Data Range |
|---|---|---|
| 5 | Portamento Time | 0...127 |

When Portamento (control number 065) is ON, this regulates the speed of the pitch change.
A value of 0 is the shortest portamento time, and 127 is the longest portamento time.
If the receive channel is a drum part, Portamento Time is not received.

### 1.2.6 Data Entry

This message sets the value of the parameter which was specified by RPN MSB/LSB (see 1.2.22) and NRPN MSB/LSB (see 1.2.21).

| Control# | Parameter | Data Range |
|---|---|---|
| 6 | Data Entry MSB | 0...127 |
| 38 | Data Entry LSB | 0...127 |

### 1.2.7 Main Volume

This message controls the volume of each part.
This is used to adjust the volume balance between parts.

| Control# | Parameter | Data Range |
|---|---|---|
| 7 | Main Volume | 0...127 |

When the Multi Part parameter Rcv VOLUME = OFF, that part will not receive Main Volume.
With a value of 0 there will be no sound, and a value of 127 will be the maximum volume.

### 1.2.8 Panpot

This message control the panning (stereo location) of each part.
This will be the location of the sound when heard in stereo.

| Control# | Parameter | Data Range |
|---|---|---|
| 10 | Pan | 0...64...127 |

When the Multi Part parameter Rcv PAN = OFF, that part will not receive Panpot.
0 is left, 64 is center, and 127 is right.

### 1.2.9 Expression

This message controls expression (dynamics within a musical line) for each part.
It is used to create volume changes during a song.

| Control# | Parameter | Data Range |
|---|---|---|
| 11 | Expression | 0...127 |

If the Multi Part parameter Rcv EXPRESSION = OFF, that part will not receive Expression.
With a value of 0 there will be no sound, and with a value of 127 the volume will be maximum.

### 1.2.10 Control Change13

| Control# | Parameter | Data Range |
|---|---|---|
| 13 | Control Change13 | 0...127 |

Valid only when a VL sound is selected.

### 1.2.11 Hold1

This message controls sustain pedal on/off.
The notes that are sounding while the pedal is pressed will be sustained.

| Control# | Parameter | Data Range |
|---|---|---|
| 64 | Hold1 | 0...63,64...127<br>(OFF, ON) |

For data of 0...63 the sustain pedal will be OFF (released), and for data of 64...127 it will be on (pressed).
When this is ON, currently-sounding notes will continue to sound even if note-off messages are received.
If the Multi Part parameter Rcv HOLD1 = OFF, that part will not receive Hold1.

### 1.2.12 Portamento

This message controls portamento on/off.
When the pedal is pressed, a portamento effect will be applied.

| Control# | Parameter | Data Range |
|---|---|---|
| 65 | Portamento | 0...63, 64...127<br>(OFF, ON) |

For data of 0...63 the portamento pedal will be OFF (released), and for 64...127 it will be ON (pressed).
When this is ON, the pitch will change smoothly between notes. The time over which the pitch changes is adjusted by Portamento Time (see 1.2.3). Also, when the Multi Part parameter MONO/POLY MODE = MONO, the tone will also change smoothly (legato) if Portamento = ON.
If any of the following Multi Part parameter settings apply, that part will not receive Portamento.
• Rcv PORTAMENTO = OFF
• PART MODE = DRUM, DRUMS1...4

### 1.2.13 Sostenuto

This message controls sostenuto pedal on/off.
Notes which were already pressed when the pedal was pressed will be sustained.

| Control# | Parameter | Data Range |
|---|---|---|
| 66 | Sostenuto | 0...63,64...127<br>(OFF, ON) |

For data of 0...63, the sostenuto pedal will be OFF (released), and for 64...127 it will be ON (pressed).
If sostenuto is turned on while a note is sounding, that note will be sustained until sostenuto is turned OFF.
If the Multi Part parameter Rcv SOSTENUTO = OFF, that part will not receive Sostenuto.
Has no effect on VL sounds.

### 1.2.14 Soft Pedal

This message controls soft pedal on/off.
The sound will become more mellow while the pedal is pressed.

| Control# | Parameter | Data Range |
|---|---|---|
| 67 | Soft Pedal | 0...63, 64...127<br>(OFF, ON) |

For data of 0...63, the soft pedal is OFF (released), and for 64...127 it is ON (pressed).
If any of the following Multi Part parameter settings apply, that part will not receive the Soft Pedal.
• Rcv SOFT PEDAL = OFF
• PART MODE = DRUM, DRUM1...4

### 1.2.15 Harmonic Content

This message adjusts the resonance of the filter that is specified for the sound.
The value of 0~127 is taken as -64~+63, and added as an offset value to the original sound data to modify the resonance.

| Control# | Parameter | Data Range |
|---|---|---|
| 71 | Harmonic Content | 0...64...127<br>(-64...0...+63) |

Since this is a relative change parameter, it specifies a boost or cut relative to 64.
Higher values will produce a more distinctive sound.
For some sounds, the effective range may be less than the possible range of settings.

### 1.2.16 Release Time

This message adjusts the EG release time that was specified by the sound data.
The value of 0~127 is taken as -64~+63, and added to the original sound data as an offset value to modify the release time.

| Control# | Parameter | Data Range |
|---|---|---|
| 72 | Release Time | 0...64...127<br>(-64...0...+63) |

Since this is a relative change parameter, it specifies an increase or decrease relative to 64.
Increasing this value will lengthen the release that follows a note-off.

### 1.2.17 Attack Time

This message adjusts the EG attack time that was specified by the sound data.
The value of 0~127 is taken as -64~+63, and added to the original sound data as an offset value to modify the attack time.

| Control# | Parameter | Data Range |
|---|---|---|
| 73 | Attack Time | 0...64...127<br>(-64...0...+63) |

Since this a relative change parameter, it specifies an increase or decrease relative to 64.
Increasing this value will make the attack more gradual, and decreasing this value will make the attack sharper.

### 1.2.18 Brightness

This message adjusts the cutoff frequency of the low pass filter specified by the sound data.
The value of 0~127 is taken as -64~+63, and added to the original sound data as an offset value to modify the cutoff frequency.

| Control# | Parameter | Data Range |
|---|---|---|
| 74 | Brightness | 0...64...127<br>(-64...0...+63) |

Since this is a relative change parameter, it specifies an increase or decrease relative to 64.
Lower values will produce a more mellow sound.
For some sounds, the effective range may be less than the possible range of settings.

### 1.2.19 Portamento Control

This message specifies the portamento source key number (the key number at which portamento will begin).
Data of 0...127 specifies the portamento source key.
When Portamento Control is received, the currently-sounding pitch will change at a Portamento Time of 0 to the key of the next-received note-on of the same channel.

| Control# | Parameter | Data Range |
|---|---|---|
| 84 | Portamento Control | 0...127<br>(C-2...G8) |

This is received even if Rcv PORTAMENTO = OFF.
Has no effect on VL sounds.

### 1.2.20 Effect1 Depth(Reverb Send Level)

This message specifies the send level for the reverb effect.

| Control# | Parameter | Data Range |
|---|---|---|
| 91 | Effect1 Depth | 0...127 |

Increasing this value will produce a richer reverb. The effect of the value will depend on the state of the reverb effect.

### 1.2.21 Effect3 Depth(Chorus Send Level)

This message specifies the send level for the chorus effect.

| Control# | Parameter | Data Range |
|---|---|---|
| 93 | Effect3 Depth | 0...127 |

Raising this value will increase the modulation or spaciousness. The effect of the value will depend on the state of the chorus effect.

### 1.2.22 Effect4 Depth (Variation Effect Send Level)

This message specifies the send level for the variation effect.

| Control# | Parameter | Data Range |
|---|---|---|
| 94 | Effect4 Depth | 0...127 |

However, this is not received if the Variation Effect parameter Variation Connection = 0 (Insertion).

### 1.2.23 Data Increment/Decrement (for RPN)

After RPN (see 1.2.22) is used to specify a parameter such as Pitch Bend Sensitivity, Fine Tune, or Coarse Tune, this message is used to increment or decrement the respective parameter value in steps of 1.

| Control# | Parameter | Data Range |
|---|---|---|
| 96 | RPN Increment | -- |
| 97 | RPN Decrement | -- |

The data byte is ignored.

### 1.2.24 NRPN (Non-registered parameter number)

This message is used to specify a sound parameter (such as vibrato, filter, EG, drum setup etc.) as an offset value.
Use NRPN MSB and NRPN LSB to specify the parameter that you wish to modify, and then use Data Entry (see 1.2.4) to set the value for the specified parameter.

| Control# | Parameter | Data Range |
|---|---|---|
| 98 | NRPN LSB | 0...127 |
| 99 | NRPN MSB | 0...127 |

If the Multi Part parameter Rcv NRPN = OFF, that part will not receive NRPN.

The following NRPN messages can be received.

| NRPN MSB | NRPN LSB | Data Entry *1 MSB | Data Entry *1 LSB | Parameter name and value range |
|---|---|---|---|---|
| 01 | 08 | mm | -- *2 | Vibrato rate<br>mm: 00 - 64 - 127<br>(-64...0...+63) |
| 01 | 09 | mm | -- | Vibrato depth<br>mm: 00 - 64 - 127<br>(-64...0...+63) |
| 01 | 10 | mm | -- *3 | Vibrato delay<br>mm: 00 - 64 - 127<br>(-64...0...+63) |
| 01 | 32 | mm | -- | Low pass filter cutoff frequency<br>mm: 00 - 64 - 127<br>(-64...0...+63) |
| 01 | 33 | mm | -- | Low pass filter resonance<br>mm : 00 - 64 - 127<br>(-64...0...+63) |
| 01 | 34 | mm | -- | Filter EG Depth (VL sounds only)<br>mm : 00 - 64 - 127<br>(-64...0...+63) |
| 01 | 36 | mm | -- | High pass filter cutoff frequency (Has no effect on VL sounds)<br>mm: 00 - 64 - 127<br>(-64...0...+63) |
| 01 | 48 | mm | -- *4 | EQ bass gain<br>mm: 00 - 64 - 127<br>(-64...0...+63) |
| 01 | 49 | mm | -- *4 | EQ treble gain<br>mm: 00 - 64 - 127<br>(-64...0...+63) |
| 01 | 52 | mm | -- *4 | EQ bass frequency (Has no effect on VL sounds)<br>mm: 04 - 40<br>(32...2.0k [Hz]) |
| 01 | 53 | mm | -- *4 | EQ treble frequency (Has no effect on VL sounds)<br>mm: 28 - 58<br>(500...16.0k [Hz]) |
| 01 | 99 | mm | -- | EG attack time<br>mm: 00 - 64 - 127<br>(-64 ..0...+63) |
| 01 | 100 | mm | -- | EG decay time<br>mm: 00 - 64 - 127<br>(-64...0...+63) |
| 01 | 102 | mm | -- | EG release time<br>mm: 00 - 64 - 127<br>(-64...0...+63) |
| 20 | rr | mm | -- | Drum low pass filter cutoff frequency<br>rr: drum instrument note number<br>mm: 00 - 64 - 127<br>(-64...0...+63) |
| 21 | rr | mm | -- | Drum low pass filter resonance<br>rr: drum instrument note number<br>mm: 00 - 64 - 127<br>(-64...0...+63) |
| 22 | rr | mm | -- | Drum EG attack rate<br>rr: drum instrument note number<br>mm: 00 - 64 - 127<br>(-64...0...+63) |
| 23 | rr | mm | -- | Drum EG decay rate<br>rr: drum instrument note number<br>mm: 00 - 64 - 127<br>(-64...0...+63)<br>The effect will apply both to Decay 1 and 2. |
| 24 | rr | mm | -- | Drum instrument pitch coarse<br>rr: drum instrument note number<br>mm: 00 - 64 - 127<br>(-64...0...+63) |
| 25 | rr | mm | -- | Drum instrument pitch fine<br>rr: drum instrument note number<br>mm: 00 - 64 - 127<br>(-64...0...+63) |
| 26 | rr | mm | -- | Drum instrument level<br>rr: drum instrument note number<br>mm: 00 - 127(0...maximum) |
| 28 | rr | mm | -- | Drum instrument panpot<br>rr: drum instrument note number<br>mm: 00, 01-64-127(RND, L63...C...R63) |
| 29 | rr | mm | -- | Drum instrument reverb send level<br>rr: drum instrument note number<br>mm: 00 - 127(0...maximum) |

| | | | | |
|---|---|---|---|---|
| 30 | rr | mm | -- | Drum instrument chorus send level<br>rr: drum instrument note number<br>mm: 00 - 127(0...maximum) |
| 31 | rr | mm | -- | Drum instrument variation send level<br>rr: drum instrument note number<br>mm: 00 - 127(0...maximum) (when Variation Connection = SYSTEM))<br>mm: 00, 01-127 (OFF,ON) (when Variation Connection = INSERTION)) |
| 36 | rr | mm | -- | Drum high pass filter cutoff frequency<br>mm: 00 - 64 - 127 (-64...0...+63) |
| 48 | rr | mm | -- | Drum EQ bass gain<br>mm: 00 - 64 - 127 (-64...0... +63) |
| 49 | rr | mm | -- | Drum EQ treble gain<br>mm: 00 - 64 - 127 (-64...0...+63) |
| 52 | rr | mm | -- | Drum EQ bass frequency<br>mm: 04 - 40(32...2.0k [Hz]) |
| 53 | rr | mm | -- | Drum EQ treble frequency<br>mm: 28 - 58(500...16.0k [Hz]) |

MSB 14H-35H (for drums) is received when Multi Part parameter PART MODE = DRUMS1...4.

*1 Refer to 1.2.4
*2 '--' indicates that the setting value is ignored.
*3 Adjusts the time after the note is played until vibrato begins to take effect. The effect will begin more quickly for higher values, and more slowly for higher values. No effect if Bank Select MSB=127 is selected.
*4 No effect if Multi Part parameter PART MODE = DRUM, DRUMS1...4.

### 1.2.25 RPN (Registered parameter number)

This message is used to specify part parameters such as Pitch Bend Sensitivity or Tuning etc. as an offset value.
Use RPN MSB and RPN LSB to specify the parameter that you wish to modify, and then use Data Entry (see 1.2.4) to set the value of the specified parameter.

| Control# | Parameter | Data Range |
|---|---|---|
| 100 | RPN LSB | 0...127 |
| 101 | RPN MSB | 0...127 |

If the Multi Part parameter Rcv RPN = OFF, that part will not receive this message.

The following RPN messages can be received.

| RPN MSB | RPN LSB | Data Entry*1 MSB | Data Entry*1 LSB | Parameter name and value range |
|---|---|---|---|---|
| 00 | 00 | mm | -- *2 | Pitch bend sensitivity<br>mm: 00-24 (0...+24 semitones)<br>Specify up to 2 octaves in semitone steps |
| 00 | 01 | mm | ll | Fine tuning<br>mm ll: 00 00 -100 cents<br>: :<br>mm ll: 64 00 0 cents<br>: :<br>mm ll: 127 127 +100 cents<br>[Note] mm ll: 00 127 (=-87.5) cents is followed by 01 00 (=-87.4) cents. |
| 00 | 02 | mm | -- | Coarse tuning<br>mm: 40 - 64 - 88<br>(-24...0...+24 semitones) |
| 127 | 127 | -- | -- | RPN Null<br>This sets RPN and NRPN numbers to an unset state.<br>Internal data is not affected. |

*1 Refer to 1.2.4
*2 '--' indicates that the setting value is ignored.

### 1.2.26 Assignable controller

By assigning a control change number of 0...95 to a part, the specified effect can be controlled.
This device allows two control change numbers (AC1 and AC2) to be specified for each part.
The following parameters specify the effect of AC1 and AC2.
• Multi Part Parameter
1. AC1, AC2 PITCH CONTROL
2. AC1, AC2 FILTER CONTROL
3. AC1, AC2 AMPLITUDE CONTROL
4. AC1, AC2 LFO PMOD DEPTH
5. AC1, AC2 LFO FMOD DEPTH
6. AC1, AC2 LFO AMOD DEPTH
• Effect1 Parameter
7. AC1, AC2 VARIATION CONTROL DEPTH
(Valid if Variation Effect is assigned to a part as Insertion)

The AC1 control change number is specified by the Multi Part or A/D Part parameter AC1 CONTROLLER NUMBER, and the AC2 control change number is specified by the Multi Part or A/D Part parameter AC2 CONTROLLER NUMBER.

## 1.3 Channel mode messages

These messages specify the basic operation of a part.

### 1.3.1 All Sound Off

This message silences all currently-sounding notes on the corresponding channel.
However, the state of channel messages such as Note-on and Hold-on will be maintained.

| Control# | Parameter | Data Range |
|---|---|---|
| 120 | All Sound Off | 0 |

### 1.3.2 Reset All Controllers

This message resets the following controllers to their default values.

| Controller | Value |
|---|---|
| Pitch bend change | ±0 (center) |
| Channel pressure | 0 (off) |
| Polyphonic key pressure | 0 (off) |
| Modulation | 0 (off) |
| Breath control | 127 (maximum) |
| Foot control | 127 (maximum) |
| Expression | 127 (maximum) |
| Control change13 | ±0 (center) |
| Hold | 0 (off) |
| Portamento | 0 (off) |
| Sostenuto | 0 (off) |
| Soft pedal | 0 (off) |
| Portamento control | Reset the portamento source note number that was received |
| RPN | Number unset, internal data is not affected. |
| NRPN | Number unset, internal data is not affected. |

The following data is not changed
Parameter values specified by program change, bank select MSB/LSB, volume, pan, effect send levels 1, 3, 4, RPN and NRPN.

| Control# | Parameter | Data Range |
|---|---|---|
| 121 | Reset All Controllers | 0 |

### 1.3.3 All Note Off

This message turns off all notes which are currently on for the corresponding part.
However, if Hold 1 or Sostenuto are on, notes will continue to sound until these are turned off.

| Control# | Parameter | Data Range |
|---|---|---|
| 123 | All Note Off | 0 |

### 1.3.4 Omni Off

Perform the same processing as when All Note Off is received.

| Control# | Parameter | Data Range |
|---|---|---|
| 124 | Omni Off | 0 |

### 1.3.5 Omni On

Perform the same processing as when All Note Off is received.

| Control# | Parameter | Data Range |
|---|---|---|
| 125 | Omni On | 0 |

### 1.3.6 Mono

Perform the same processing as when All Sound Off is received, and if the value (mono number) is in the range of 0...16, set the corresponding channel to Mode4* (m = 1).

| Control# | Parameter | Data Range |
|---|---|---|
| 126 | Mono | 0...16 |

* Mode4 is a state in which only channel messages on the specified channel will be received, and notes will be sounded individually (monophonically).

### 1.3.7 Poly

Perform the same processing as when All Sound Off is received, and set the corresponding channel to Mode3*

| Control# | Parameter | Data Range |
|---|---|---|
| 127 | Poly | 0 |

* Mode3 is when channel messages will be received only on the specified channel, and will be sounded polyphonically.

## 1.4 Program change

This message is used to select voices or performances.
When this is transmitted in conjunction with Bank Select (see 1.2.1), voices and performances can be selected not only from the basic voice bank but also from the extended voice bank and from internal performances.
If the Multi Part parameter Rcv PROGRAM CHANGE = OFF, that part will not receive program changes.
If Sound Module Mode = C/M, program changes for the Drum Part will not be received.

## 1.5 Pitch bend

This message conveys movements of the pitch bender.
This message is generally used to modify the pitch of a part, but the depth of the following seven effects can be controlled.
The effect of this message can be modified by the following parameters.

• Multi Part Parameter
1. BEND PITCH CONTROL
2. BEND FILTER CONTROL
3. BEND AMPLITUDE CONTROL
4. BEND LFO PMOD DEPTH
5. BEND LFO FMOD DEPTH
6. BEND LFO AMOD DEPTH

• Effect1 Parameter
7. BEND VARIATION CONTROL DEPTH
(Valid when Variation Effect is assigned to a part as Insertion)

By default, the Pitch Control effect is applied.
If the receive channel is a drum part, effects 5 and 6 will not apply.
If the Multi Part parameter Rcv PITCH BEND CHANGE = OFF, that part will not receive pitch bend messages.

### 1.6 Channel aftertouch

This message conveys the pressure which is applied to the keyboard after playing a note in order to create tonal changes (for an entire MIDI channel). The pressure can be controlled for each part. This message will affect the currently-sounding notes.
The effect of this message will be determined by the settings of the following parameters.

• Multi Part Parameter
1. CAT PITCH CONTROL
2. CAT FILTER CONTROL
3. CAT AMPLITUDE CONTROL
4. CAT LFO PMOD DEPTH
5. CAT LFO FMOD DEPTH
6. CAT LFO AMOD DEPTH

• Effect1 Parameter
7. CAT VARIATION CONTROL DEPTH
(Valid when the Variation Effect is assigned to a part as Insertion)

By default, there will be no effect.
If the receive channel is a drum part, effects 5 and 6 will not apply.
If the Multi Part parameter Rcv CHANNEL AFTER TOUCH = OFF, that part will not receive Channel Aftertouch.

### 1.7 Polyphonic aftertouch

This message conveys the pressure that is applied to the keyboard after playing a note (for individual note numbers).
The pressure can be controlled independently for each note. This message will affect currently-sounding notes.
The effect of this message is determined by the following Multi Part parameters.

1. PAT PITCH CONTROL
2. PAT FILTER CONTROL
3. PAT AMPLITUDE CONTROL
4. PAT LFO PMOD DEPTH
5. PAT LFO FMOD DEPTH
6. PAT LFO AMOD DEPTH

By default, there will be no effect.
The effect will apply to note numbers 36...97.
In the case of either of the following Multi Part parameter settings, that part will not receive Polyphonic Aftertouch.

Rcv CHANNEL AFTER TOUCH = OFF
PART MODE = DRUM, DRUMS1...4

## 2. System exclusive messages

These MIDI messages are not directly "performance data," but are used to make settings related to the system of the MIDI device.
For example, these messages can be used to save data specific to this device on a MIDI data filer such as the MDF2, or to exchange data between two or more MU100R units.
By using these messages, it is possible to edit virtually all settings of the MU100R from an external MIDI device.
However, data cannot be exchanged unless the receiving and transmitting devices are set to the same Device Number.

### 2.1 Parameter changes

This devices uses the following parameter changes.

[UNIVERSAL REALTIME MESSAGE]
1) Master Volume

[UNIVERSAL NON REALTIME MESSAGE]
1) General MIDI System On
2) Identity Request(INQUIRY MESSAGE)
3) Identity Reply(INQUIRY MESSAGE)

[XG PARAMETER CHANGE]
1) XG System on
2) XG System parameter change
3) Multi Effect1 parameter change
4) Multi EQ parameter change
5) Multi Effect2 parameter change
6) Unique Effect parameter change
7) Display parameter change
8) Multi Part parameter change
9) AD Part parameter change
10) AD System parameter change
11) Drums Setup parameter change
12) Part Assign parameter change

[MU100 NATIVE PARAMETER CHANGE 1]
1) System parameter change
2) Remote switch

[MU100 NATIVE PARAMETER CHANGE 2]
1) Current Performance parameter change

[VL70-m NATIVE PARAMETER CHANGE]
1) VL System parameter change
2) VL Current Voice/Common Misc parameter change
3) VL Part parameter change
4) VL Current Voice/Element parameter change

[Others]
1) Master tuning
2) TG300 System parameter change
3) TG300 Multi Effect parameter change
4) TG300 Multi Part parameter change

#### 2.1.1 Universal realtime messages

##### 2.1.1.1 Master Volume

This system exclusive message is used to control the volume of all channels simultaneously.

| | | | |
|---|---|---|---|
| | 11110000 | F0H | = Exclusive status |
| | 01111111 | 7FH | = Universal Real Time |
| | 01111111 | 7FH | = ID of target device |
| | 00000100 | 04H | = Sub-ID #1 = Device Control Message |
| | 00000001 | 01H | = Sub-ID #2 = Master Volume |
| * | 0sssssss | SSH | = Volume LSB |
| | 0ttttttt | TTH | = Volume MSB |
| | 11110111 | F7H | = End of Exclusive |
| | or, | | |
| | 11110000 | F0H | = Exclusive status |
| | 01111111 | 7FH | = Universal Real Time |
| | 0xxxnnnn | XNH | = Device Number, xxx = don't care |

| | | |
|---|---|---|
| 00000100 | 04H | = Sub-ID #1 = Device Control Message |
| 00000001 | 01H | = Sub-ID #2 = Master Volume |
| 0sssssss | SSH | = Volume LSB |
| 0ttttttt | TTH | = Volume MSB |
| 11110111 | F7H | = End of Exclusive |

When this is received, the Volume MSB will be reflected by the System parameter MASTER VOLUME.

* The binary expression 0sssssss is expressed in hexadecimal as SSH.
The same applies elsewhere.

### 2.1.2 Universal non-realtime messages

#### 2.1.2.1 General MIDI System On

This system exclusive message causes the MU100R to function as a tone generator that is compatible with GM System Level 1.

| | | |
|---|---|---|
| 11110000 | F0H | = Exclusive status |
| 01111110 | 7EH | = Universal Non-Real Time |
| 01111111 | 7FH | = ID of target device |
| 00001001 | 09H | = Sub-ID #1 = General MIDI Message |
| 00000001 | 01H | = Sub-ID #2 = General MIDI On |
| 11110111 | F7H | = End of Exclusive |

or,

| | | |
|---|---|---|
| 11110000 | F0H | = Exclusive status |
| 01111110 | 7EH | = Universal Non-Real Time |
| 0xxxnnnn | XNH | = N:Device Number, X:don't care |
| 00001001 | 09H | = Sub-ID #1 = General MIDI Message |
| 00000001 | 01H | = Sub-ID #2 = General MIDI On |
| 11110111 | F7H | = End of Exclusive |

When this message is received, the SOUND MODULE MODE is set to XG, and all MIDI messages defined by GM will be received.
All data except for MIDI Master Tuning will be restored to the default value.
However this message will not be received in any of the following cases.
• SOUND MODULE MODE = C/M
• MU100 System Parameter (see table 2-2) Rcv GM EXCLUSIVE MESSAGE= OFF
Since approximately 50[ms] is required in order to process this message, be sure to allow an appropriate interval before sending the next message.

#### 2.1.2.2 Identity Request

| | | |
|---|---|---|
| 11110000 | F0H | = Exclusive status |
| 01111110 | 7EH | = Universal Non-Real Time |
| 0mmmmmmm | MMH | = Device Number |
| 00000110 | 06H | = Sub-ID #1 = General Information |
| 00000001 | 01H | = Sub-ID #2 = Identity Request |
| 11110111 | F7H | = End of Exclusive |

When this message is received, this device will transmit an Identity Reply message as described in the following section 2.1.2.3.

#### 2.1.2.3 Identity Reply

| | | |
|---|---|---|
| 11110000 | F0H | = Exclusive status |
| 01111110 | 7EH | = Universal Non-Real Time |
| 0mmmmmmm | MMH | = Device Number |
| 00000110 | 06H | = Sub-ID #1 = General Information |
| 00000010 | 02H | = Sub-ID #2 = Identity Reply |
| 01000011 | 43H | = YAMAHA ID |
| 00000000 | 00H | = Device Family Code LSB MU100R ID #1 |
| 01000001 | 41H | = Device Family Code MSB MU100R ID #2 |
| 00000000 | 00H | = Device Number Code LSB MU100R ID #3 |
| 00000011 | 03H | = Device Number Code MSB MU100R ID #4 |
| 00000000 | 00H | |
| 00000000 | 00H | |
| 00000000 | 00H | |
| 00000001 | 01H | = Tone Generator Code = XG |
| 11110111 | F7H | = End of Exclusive |

This device will transmit this message when it receives the Identity Request message of 2.1.2.2.

### 2.1.3 XG parameter change

This message sets XG-related parameters. Each message can set a single parameter.
The message format is as follows.

| | | |
|---|---|---|
| 11110000 | F0H | Exclusive status |
| 01000011 | 43H | YAMAHA ID |
| 0001nnnn | 1NH | N:device Number |
| 01001100 | 4CH | Model ID |
| 0ggggggg | GGH | Address High |
| 0mmmmmmm | MMH | Address Mid |
| 01111111 | LLH | Address Low |
| 0sssssss | SSH | Data |
| : | : | |
| 11110111 | F7H | End of Exclusive |

For parameters whose Data Size is 2 or 4, the appropriate amount of data will be transmitted as indicated by Size.

#### 2.1.3.1 XG System On

This system exclusive message causes the MU100R to function as an "XG"-compatible tone generator.

| | | |
|---|---|---|
| 11110000 | F0H | Exclusive status |
| 01000011 | 43H | YAMAHA ID |
| 0001nnnn | 1NH | N:device Number |
| 01001100 | 4CH | Model ID |
| 00000000 | 00H | Address High |
| 00000000 | 00H | Address Mid |
| 01111110 | 7EH | Address Low |
| 00000000 | 00H | Data |
| 11110111 | F7H | End of Exclusive |

When On is received, the SOUND MODULE MODE will be set to XG, and all MIDI messages defined by XG such as NRPN or bank select etc. can be received.
Since approximately 50[ms] are required in order to execute this message, please allow an appropriate interval before transmitting the next message.

#### 2.1.3.2 XG System parameter change

This message sets the XG SYSTEM block (refer to tables <1 -1>, <1 - 2>).

#### 2.1.3.3 Multi Effect1 parameter change

This message sets the MULTI EFFECT1 block (refer to tables <1 - 1>, <1 - 4>).

#### 2.1.3.4 Multi EQ parameter change

This message sets the MULTI EQ block (refer to tables <1 - 1>, <1 - 5>).

#### 2.1.3.5 Multi Effect2 parameter change

This message sets the MULTI EFFECT2 block (refer to tables <1 - 1>, <1 - 6>).

#### 2.1.3.6 Unique Effect parameter change

This messages set the Unique Effect block (refer to tables <1 - 1>, <1 - 7>).

#### 2.1.3.7 Display parameter change

This message sets the DISPLAY block (refer to tables <1 - 1>, <1 - 8>).

#### 2.1.3.8 Multi Part parameter change

This message sets the MULTI PART block (refer to tables <1 - 1>, <1 - 9>).

#### 2.1.3.9 AD Part parameter change

This message sets the AD PART block (refer to tables <1 - 1> , <1 - 10>).

#### 2.1.3.10 AD System parameter change

This message sets the AD SYSTEM block (refer to tables <1 - 1>, <1 - 11>).

#### 2.1.3.11 Drums Setup parameter change

This message sets the DRUMS SETUP block (refer to tables <1 - 1> , <1 - 12>).

#### 2.1.3.12 Part Assign parameter change

This messages set the Part Assign block (refer to tables <1 - 1> , <1 - 13>).

### 2.1.4 MU100 native parameter change (1)

This message sets parameters unique to the MU100. Each message sets a single parameter.
As indicated below, the message format is in common with the MU50, MU80, and MU90.

| | | |
|---|---|---|
| 11110000 | F0H | Exclusive status |
| 01000011 | 43H | YAMAHA ID |
| 0001nnnn | 1NH | N:Device Number |
| 01001001 | 49H | Model ID |
| 0ggggggg | GGH | Address High |
| 0mmmmmmm | MMH | Address Mid |
| 01111111 | LLH | Address Low |
| 0vvvvvvv | VVH | Data |
| : | : | |
| 11110111 | F7H | End of Exclusive |

For parameters whose Data Size is 2 or 4, the number of data bytes indicated by Size are transmitted.

#### 2.1.4.1 MU100 System parameter change

This message sets the SYSTEM block (refer to tables <2 - 1>, <2 - 2>).

#### 2.1.4.2 Remote Switch

This message sets the REMOTE SWITCH (refer to tables <2 - 1>, <2 - 3>).

### 2.1.5 MU100 native parameter change (2)

This message sets parameters which are unique to the MU100. Each message modifies a single parameter.
The format of this message is the same as for the MU90, as shown below.

| | | |
|---|---|---|
| 11110000 | F0H | Exclusive status |
| 01000011 | 43H | YAMAHA ID |
| 0001nnnn | 1NH | N:Device Number |
| 01011001 | 59H | Model ID |
| 0ggggggg | GGH | Address High |
| 0mmmmmmm | MMH | Address Mid |
| 01111111 | LLH | Address Low |
| 0vvvvvvv | VVH | Data |
| : | : | |
| 11110111 | F7H | End of Exclusive |

For parameters whose Data Size is 2 or 4, the number of data bytes indicated by Size are transmitted.

#### 2.1.5.1 Current Performance parameter change

This message sets the CURRENT PERFORMANCE block (refer to tables <3 - 1>, <3 - 2>).

### 2.1.6 VL70-m native parameter changes

| | | |
|---|---|---|
| 11110000 | F0H | Exclusive status |
| 01000011 | 43H | YAMAHA ID |
| 0001nnnn | 1NH | N:Device Number |
| 01010111 | 57H | Model ID |
| 0ggggggg | GGH | Address High |
| 0mmmmmmm | MMH | Address Mid |
| 01111111 | LLH | Address Low |
| 0vvvvvvv | VVH | Data |
| : | : | |
| 11110111 | F7H | End of Exclusive |

#### 2.1.6.1 VL System parameter change

(refer to table <4 - 1>).

#### 2.1.6.2 VL Current Voice/Common Misc parameter change

(refer to table <4 - 2>).

#### 2.1.6.3 VL Part parameter change

(refer to table <4 - 3>).

#### 2.1.6.4 VL Current Voice/Element parameter change

(refer to table <4 - 4>).

### 2.1.7 Other parameter changes

#### 2.1.7.1 Master tuning

This message simultaneously modifies the tuning of all channels.

| | | |
|---|---|---|
| 11110000 | F0H | Exclusive status |
| 01000011 | 43H | YAMAHA ID |
| 0001nnnn | 1NH | N:device Number |
| 00100111 | 27H | Model ID |
| 00110000 | 30H | Address High |
| 00000000 | 00H | Address Mid |
| 00000000 | 00H | Address Low |
| 0000mmmm | 0MH | Master Tune MSB |
| 00001111 | 0LH | Master Tune LSB |
| 0xxxxxxx | XXH | don't care |
| 11110111 | F7H | End of Exclusive |

Normally, the XG SYSTEM message MASTER TUNE should be used (refer to table <1-2>).

## 2.2 Bulk dump

This device uses the following bulk dump messages.

[XG BULK DUMP]

1) XG System bulk dump
2) System Information bulk dump
3) Multi Effect1 bulk dump
4) Multi EQ bulk dump
5) Multi Effect2 bulk dump
6) Multi Part bulk dump
7) AD Part bulk dump
8) Drums Setup bulk dump

[MU100 NATIVE BULK DUMP 1]

1) MU100 System bulk dump
2) MU80, MU50 Internal Performance bulk dump

[MU100 NATIVE BULK DUMP 2]

1) MU100 Internal Performance bulk dump

[VL70-m NATIVE BULK DUMP]

1) VL System bulk dump
2) VL Current Voice/Common Misc bulk dump
3) VL Part bulk dump
4) VL Current Voice/Element bulk dump
5) VL Custom Voice bulk dump
6) VL Internal Voice bulk dump

### 2.2.1 XG bulk dump

This message sets XG-related parameters. Unlike parameter change messages, a single message can modify multiple parameters. The message format is as follows.

| | | |
|---|---|---|
| 11110000 | F0H | Exclusive status |
| 01000011 | 43H | YAMAHA ID |
| 0000nnnn | 0NH | N:Device Number |
| 01001100 | 4CH | Model ID |
| 0ssssss | SSH | ByteCountMSB |
| 0ttttttt | TTH | ByteCountLSB |
| 0ggggggg | GGH | Address High |
| 0mmmmmmm | MMH | Address Mid |
| 01111111 | LLH | Address Low |
| 0vvvvvvv | VVH | Data |
| : | : | |
| 0kkkkkkk | KKH | Check-sum |
| 11110111 | F7H | End of Exclusive |

Address and Byte Count are given in tables 1-n. Byte Count is indicated by the total size of the Data in tables 1-n.
Bulk dump and dump request messages are received when the beginning of the block is specified as the 'Address'.
'Block' indicates the unit of the data string that is indicated in tables 1-n as 'Total size'.
Check sum is the value that produces a lower 7 bits of 0 when the Start Address, Byte Count, Data, and the Check-sum itself are added.

#### 2.2.1.1 XG System bulk dump

This message sets the XG SYSTEM block (refer to tables <1 -1>, <1 - 2>).

#### 2.2.1.2 System Information bulk dump

This message indicates the contents of the SYSTEM INFORMATION block (refer to tables <1 - 1>, <1 - 3>).
This message is transmitted in response to a Dump Request, but this message will be ignored if it is received.

#### 2.2.1.3 Multi Effect1 bulk dump

This message sets the MULTI EFFECT1 block (refer to tables <1 - 1>, <1 - 4>).

#### 2.2.1.4 Multi EQ bulk dump

This message sets the MULTI EQ block (refer to tables <1 - 1>, <1 - 5>).

#### 2.2.1.5 Multi Effect2 bulk dump

This message sets the MULTI EFFECT2 block (refer to tables <1 - 1>, <1 - 6>).

#### 2.2.1.6 Unique Effect bulk dump

This messages set the Unique Effect block (refer to tables <1 - 1>, <1 - 7>).

#### 2.2.1.7 Multi Part bulk dump

This message sets the MULTI PART block (refer to tables <1 - 1>, <1 - 9>).

#### 2.2.1.8 A/D Part bulk dump

This message sets the A/D PART block (refer to tables <1 - 1>, <1 - 10>).

#### 2.2.1.9 Drums Setup bulk dump

This message sets the DRUMS SETUP block (refer to tables <1 - 1>, <1 - 12>).

### 2.2.2 MU100 native bulk dump (1)

This message modifies parameters unique to the MU100. Unlike parameter change messages, a single message will modify multiple parameters.

| | | |
|---|---|---|
| 11110000 | F0H | Exclusive status |
| 01000011 | 43H | YAMAHA ID |
| 0000nnnn | 0NH | N:Device Number |
| 01001001 | 49H | Model ID |
| 0sssssss | SSH | ByteCountMSB |
| 0ttttttt | TTH | ByteCountLSB |
| 0ggggggg | GGH | Address High |
| 0mmmmmmm | MMH | Address Mid |
| 01111111 | LLH | Address Low |
| 0vvvvvvv | VVH | Data |
| : | : | |
| 0kkkkkkk | KKH | Check-sum |
| 11110111 | F7H | End of Exclusive |

Details are the same as for 2.2.1 XG Bulk Dump. However, refer to table 2-n for the address, byte count, and block.

#### 2.2.2.1 MU100 System bulk dump

This message sets the SYSTEM block (refer to tables <2 - 1>, <2 - 2>).

#### 2.2.2.2 MU80, MU50 Internal Performance bulk dump

This message is in MU80 / MU50 data format. It sets the INTERNAL PERFORMANCE block (refer to tables <2 - 1>, <2 - 4>).

### 2.2.3 MU100 native bulk dump (2)

This message sets parameters unique to the MU100. Unlike parameter change messages, a single message can modify multiple parameters.

| | | |
|---|---|---|
| 11110000 | F0H | Exclusive status |
| 01000011 | 43H | YAMAHA ID |
| 0000nnnn | 0NH | N:Device Number |
| 01011001 | 59H | Model ID |
| 0sssssss | SSH | ByteCountMSB |
| 0ttttttt | TTH | ByteCountLSB |
| 0ggggggg | GGH | Address High |
| 0mmmmmmm | MMH | Address Mid |
| 01111111 | LLH | Address Low |
| 0vvvvvvv | VVH | Data |
| : | : | |
| 0kkkkkkk | KKH | Check-sum |
| 11110111 | F7H | End of Exclusive |

Details are the same as for 2.2.1 XG Bulk Dump. However, refer to table 3-n for address, byte count, and block.

#### 2.2.3.1 MU100 Internal Performance bulk dump

This message sets the INTERNAL PERFORMANCE block (refer to tables <3 - 1>, <3 - 3>).

### 2.2.4 VL70-m native bulk dump

This messages set parameters that are unique to the VL section.

| | | |
|---|---|---|
| 11110000 | F0H | Exclusive status |
| 01000011 | 43H | YAMAHA ID |
| 0001nnnn | 1NH | N:Device Number |
| 01010111 | 57H | Model ID |
| 0sssssss | SSH | ByteCountMSB |
| 0ttttttt | TTH | ByteCountLSB |
| 0ggggggg | GGH | Address High |
| 0mmmmmmm | MMH | Address Mid |
| 01111111 | LLH | Address Low |
| 0vvvvvvv | VVH | Data |
| : | : | |
| 0kkkkkkk | KKH | Check-sum |
| 11110111 | F7H | End of Exclusive |

2.2.4.1 VL System parameter change (refer to table <4 - 1>).

2.2.4.2 VL Current Voice/Common Misc parameter change (refer to table <4 - 2>).

2.2.4.3 VL Part parameter change (refer to table <4 - 3>).

2.2.4.4 VL Current Voice/Element parameter change (refer to table <4 - 4>).

2.2.4.5 VL Custom Voice bulk dump (refer to table <4 - 5>).

2.2.4.6 VL Internal Voice bulk dump (refer to table <4 - 6>).

## 2.3 Parameter request

This message requests transmission of a parameter value.
The output is transmitted in the Parameter Change message format (refer to 2.1.3, 2.1.4, and 2.1.5).

### 2.3.1 XG parameter request

This message requests transmission of XG parameter settings.
Settings are transmitted in the format of an XG parameter change (refer to 2.1.3).

| | | |
|---|---|---|
| 11110000 | F0H | Exclusive status |
| 01000011 | 43H | YAMAHA ID |
| 0011nnnn | 3NH | N:device Number |
| 01001100 | 4CH | Model ID |
| 0ggggggg | GGH | Address High |
| 0mmmmmmm | MMH | Address Mid |
| 01111111 | LLH | Address Low |
| 11110111 | F7H | End of Exclusive |

### 2.3.2 MU100 native parameter request (1)

This message requests transmission of a parameter value unique to the MU100.
The output is transmitted in the format of a MU100 native parameter change (refer to 2.1.4).

| | | |
|---|---|---|
| 11110000 | F0H | Exclusive status |
| 01000011 | 43H | YAMAHA ID |
| 0011nnnn | 3NH | N:Device Number |
| 01001001 | 49H | Model ID |
| 0ggggggg | GGH | Address High |
| 0mmmmmmm | MMH | Address Mid |
| 01111111 | LLH | Address Low |
| 11110111 | F7H | End of Exclusive |

### 2.3.3 MU100 native parameter request (2)

This message requests the transmission of a parameter value unique to the MU100.
The output format is the same as for a MU100 native parameter change (refer to 2.1.5).

| | | |
|---|---|---|
| 11110000 | F0H | Exclusive status |
| 01000011 | 43H | YAMAHA ID |
| 0011nnnn | 3NH | N:Device Number |
| 01011001 | 59H | Model ID |
| 0ggggggg | GGH | Address High |
| 0mmmmmmm | MMH | Address Mid |
| 01111111 | LLH | Address Low |
| 11110111 | F7H | End of Exclusive |

## 2.4 Dump request

This message requests transmission of a specific block of parameter values.
The output is the same as the bulk dump format.

### 2.4.1 XG dump request

This message requests transmission of all parameters of the specified block of XG parameters.
The output is the same as the format of XG bulk dump (refer to 2.2.1).

| | | |
|---|---|---|
| 11110000 | F0H | Exclusive status |
| 01000011 | 43H | YAMAHA ID |
| 0010nnnn | 2NH | N:device Number |
| 01001100 | 4CH | Model ID |
| 0ggggggg | GGH | Address High |
| 0mmmmmmm | MMH | Address Mid |
| 01111111 | LLH | Address Low |
| 11110111 | F7H | End of Exclusive |

Address is valid only when the beginning of the block has been specified.
Reception/transmission of Dump Request cannot be turned off by MIDI switches other than Exclusive = off.

### 2.4.2 MU100 native dump request (1)

This message requests transmission of all parameters of the specified block of MU100 native parameters.
The output is in the same format as an MU100 native bulk dump (refer to 2.2.2).

| | | |
|---|---|---|
| 11110000 | F0H | Exclusive status |
| 01000011 | 43H | YAMAHA ID |
| 0010nnnn | 2NH | N:Device Number |
| 01001001 | 49H | Model ID |
| 0ggggggg | GGH | Address High |
| 0mmmmmmm | MMH | Address Mid |
| 01111111 | LLH | Address Low |
| 11110111 | F7H | End of Exclusive |

Details are the same as for 2.4.1 XG Bulk Dump Request.

#### 2.4.3 MU100 native dump request (2)

This message requests transmission of all parameter values of the specified MU100 native parameter block.
The output is in the format of MU100 Native Bulk Dump (refer to 2.2.3).

| | | |
|---|---|---|
| 11110000 | F0H | Exclusive status |
| 01000011 | 43H | YAMAHA ID |
| 0010nnnn | 2NH | N:Device Number |
| 01011001 | 59H | Model ID |
| 0ggggggg | GGH | Address High |
| 0mmmmmmm | MMH | Address Mid |
| 01111111 | LLH | Address Low |
| 11110111 | F7H | End of Exclusive |

Details are the same as for 2.4.1 XG Bulk Dump Request.

## 3. Realtime messages

### 3.1 Active sensing

This message is used to prevent problems which could occur if a MIDI cable were to be disconnected or broken during a performance.
When this message is received, the MU100R will begin monitoring the state of the MIDI cable.

a) Transmission
not transmitted.

b) Receive
ReceptionOnce FE has been received, failure to receive any MIDI message for an interval longer than approximately 300 msec will cause processing to be performed as if ALL SOUND OFF, ALL NOTE OFF, and RESET ALL CONTROLLERS messages were received, and the unit will reset to a condition in which FE was never received.

### 4.1 Channel messages (for Harmony Effect)

#### 4.1.1 Note on/note off

| | | | | Harmony ch | Melody ch |
|---|---|---|---|---|---|
| 9n | kk | vv | note on message<br>For Vocoder harmony, used to specify the pitch to be sounded.<br>For Chordal harmony, used to detect chords. | ○ | ○ |
| 8n | kk | vv | note off message | | |
| 9n | kk | 00 | | | |

n : MIDI channel
kk : note number
vv : velocity

Velocity values are ignored.
For the Harmony channel, processing will be as follows.

1) For Vocoder harmony, these messages will specify the pitch to be sounded.
2) For Chordal harmony, these messages are used to detect chords.

For the Melody channel, these messages are received for the following purposes.

1) For Vocoder harmony, these messages are received as the basic pitch to control the gender of the harmony sound.
2) For Vocoder harmony, if Vocoder Mode is "Auto Transpose," the basic pitch is received.
For both 1) and 2), if the Melody channel is off, the input audio will be the basic pitch.
3) When Lead Gender and Lead Pitch Correction are on the input pitch is shifted to the note-on pitch of the received note.
If the Melody channel is off, the pitch will be shifted to the nearest chromatic pitch.

#### 4.1.2 Control changes

Bn cc VV

n : MIDI channel
cc : control#
vv : data

##### 4.1.2.1 Data Entry

This message sets the value of the parameter that was specified by RPN (refer to 1.2.4) or NRPN (refer to 1.2.3).

| Control# | Parameter | Data Range | Harmony ch | Melody ch |
|---|---|---|---|---|
| 6 | Data Entry MSB | 0...127 | ○ | ○ |

#### 4.1.2.2 Hold1

This message controls sustain pedal on/off.

| Control# | Parameter | Data Range | Harmony ch | Melody ch |
|---|---|---|---|---|
| 64 | Hold1 | 0...63, 64...127<br>(OFF, ON) | ○ | X |

When ON, currently-sounding notes will be sustained even after note-off is received.

#### 4.1.2.3 NRPN (Non-registered parameter number)

This message is used to set sound parameters such as vibrato or detune, etc.
The NRPN MSB and NRPN LSB specify the parameter which is to be controlled, and subsequently Data Entry (refer to 1.2.1) is used to set the value of the specified parameter. Only the MSB of Data Entry is recognized.

| Control# | Parameter | Data Range | Harmony ch | Melody ch |
|---|---|---|---|---|
| 98 | NRPN LSB | 0...127 | ○ | ○ |
| 99 | NRPN MSB | 0...127 | | |

The following NRPN messages are recognized.

| NRPN MSB | NRPN LSB | Data Entry MSB | Parameter name and range of values | Harmony ch | Melody ch |
|---|---|---|---|---|---|
| 00 | 00 | mm | Harmony Mute<br>mm : 00 - 63 (off), 64 - 127 (on) | ○ | X |
| 01 | 08 | mm | Vibrato Rate Modulation<br>mm : 00 - 64 - 127 (0...127)<br><br>Melody channel is effective only when Gender is ON. | ○ | ○ |
| 01 | 09 | mm | Vibrato Depth Modulation<br>mm : 00 - 64 - 127 (0...127)<br><br>Melody channel is effective only when Gender is ON. | ○ | ○ |
| 01 | 10 | mm | Vibrato Delay Modulation<br>mm : 00 - 64 - 127 (0...127)<br><br>Melody channel is effective only when Gender is ON. | ○ | ○ |
| 01 | 26 | mm | Detune Modulation<br>mm : 00 - 127 (0...127)<br><br>Controls the overall amount of detune specified for the individual voice.<br><br>The following NRPN numbers independently control the volume of each harmony note.<br>The currently-sounding harmony notes are numbered sequentially beginning from the lowest note. | ○ | X |
| 02 | 16 | mm | Harmony 1 Volume<br>mm : 00 - 127 (0...127) | ○ | X |
| 02 | 17 | mm | Harmony 2 Volume<br>mm : 00 - 127 (0...127) | ○ | X |
| 02 | 18 | mm | Harmony 3 Volume<br>mm : 00 - 127 (0...127)<br><br>The following NRPN numbers independently control the panning of each harmony note. | ○ | X |

| | | | | | |
|---|---|---|---|---|---|
| | | | The currently-sounding harmony notes are numbered sequentially beginning from the lowest note.<br>When the value is 0, panning will be random.<br>For random panning with Vocoder harmony, the pan position will change at each key-on.<br>For random panning with Chordal harmony, the pan position will change whenever the chord changes.<br>For Detune and Chromatic harmony, random pan will not function, and the panning will be centered. | | |
| 02 | 32 | mm | Harmony 1 Pan<br>mm : 00, 01 - 64 - 127<br>(random, Lch...center...Rch) | | X |
| 02 | 33 | mm | Harmony 2 Pan<br>mm : 00, 01 - 64 - 127<br>(random, Lch...center. .Rch) | | X |
| 02 | 34 | mm | Harmony 3 Pan<br>mm : 00, 01 - 64 - 127<br>(random, Lch...center...Rch) | | X |
| | | | The following NRPN numbers independently control the detune amount for each harmony sound.<br>The currently-sounding harmony notes are numbered sequentially beginning from the lowest note. | | |
| 02 | 48 | mm | Harmony 1 Detune<br>mm : 00 - 64 - 127 (-64...0...+63) | | X |
| 02 | 49 | mm | Harmony 2 Detune<br>mm : 00 - 64 - 127 (-64...0...+63) | | X |
| 02 | 50 | mm | Harmony 3 Detune<br>mm : 00 - 64 - 127 (-64...0...+63) | | X |

#### 4.1.2.4 RPN (Registered Parameter Number)

This message is used to set Pitch Bend Sensitivity.
RPN MSB and RPN LSB are used to specify the parameter which is to be controlled, and subsequently Data Entry (refer to 1.2.1) is used to set the value of the specified parameter.
Only the MSB of Data Entry is recognized.

| Control# | Parameter | Data Range |
|---|---|---|
| 100 | RPN LSB | 0...127 |
| 101 | RPN MSB | 0...127 |

The following RPN numbers are recognized.

| RPN MSB | RPN LSB | Data Entry MSB | Parameter name and range of values | Harmony ch | Melody ch |
|---|---|---|---|---|---|
| 00 | 00 | mm | Pitch Bend Sensitivity<br>mm : 00 - 24 (0...24 semitones)<br>Settable in semitone steps over a two-octave range | | |
| 127 | 127 | -- | RPN null<br>Set RPN and NRPN numbers to a condition in which no numbers have been specified.<br>Internal settings will not be affected. | | |

#### 4.1.2.5 All Note Off

For Vocoder harmony, this message turns off all currently-sounding harmony notes.

| Control# | Parameter | Data Range |
|---|---|---|
| 123 | All Note Off | 0 |

### 4.1.3 Pitch Bend

| | Harmony ch | Melody ch |
|---|---|---|
| En vv vv | ○ | ○ |

n : MIDI channel
vv : data

This message conveys operations of the pitch bender.
It will modify the pitch in the range specified by RPN Pitch Ben Sensitivity.
For the Melody channel, this message will have an effect only when Lead Gender is ON.

## 4.2 System exclusive messages (for Harmony Effect)

### 4.2.1 Chord Control Code

F0 43 7E 02 cr ct 7F 7F F7

For Chordal mode, this is used to specify the chord.
The chord can also be specified by Note-on messages.

cr : chord root (offfnnnn)

| fff : Accidental | nnnn : Note |
|---|---|
| 0 : bbb | 0 : reserved |
| 1 : bb | 1 : C |
| 2 : b | 2 : D |
| 3 : natural | 3 : E |
| 4 : # | 4 : F |
| 5 : ## | 5 : G |
| 6 : ### | 6 : B |

ct : chord type

| | |
|---|---|
| 0 : | Maj |
| 1 : | Maj6 |
| 2 : | Maj7 |
| 3 : | Maj7 (#11) |
| 4 : | Maj (9) |
| 5 : | Maj7 (9) |
| 6 : | Maj6 (9) |
| 7 : | aug |
| 8 : | min |
| 9 : | min6 |
| 0A : | min7 |
| 0B : | min7b5 |
| 0C : | min (9) |
| 0D : | min7 (9) |
| 0E : | min7 (11) |
| 0F : | minMaj7 |
| 10 : | minMaj7 (9) |
| 11 : | dim |
| 12 : | dim7 |
| 13 : | 7th |
| 14 : | 7sus4 |
| 15 : | 7b5 |
| 16 : | 7 (9) |
| 17 : | 7(#11) |
| 18 : | 7 (13) |
| 19 : | 7 (b9) |
| 1A : | 7 (b13) |
| 1B : | 7 (#9) |
| 1C : | Maj7aug |
| 1D : | 7aug |
| 1E : | 1+8 |

1F : 1+5
20 : sus4
21 : 1+2+5
22 : chord cancel  Same processing as chord-off.

(Example) To specify Am7,
F0 43 7E 02 36 0A 7F 7F F7
(A) (m7)

## < Table 1 - 1 >

Parameter Base Address
Model ID = 4C

| Parameter | Adress (H) | Adress (M) | Adress (L) | Description |
|---|---|---|---|---|
| XG SYSTEM | 00 | 00 | 00 | System |
| | 00 | 00 | 7D | Drum setup Reset |
| | 00 | 00 | 7E | XG System On |
| | 00 | 00 | 7F | All Parameter Reset |
| INFORMATION | 01 | 00 | 00 | System Information |
| EFFECT 1 | 02 | 01 | 00 | Effect 1 (Reverb, Chorus, Variation) |
| | 02 | 40 | 00 | Multi EQ |
| EFFECT 2 | 03 | 00 | 00 | Insertion Effect 1 |
| | 03 | 01 | 00 | Insertion Effect 2 |
| UNIQUE EFFECT | 04 | 00 | 00 | Insertion Effect (VH) |
| DISPLAY | 06 | 00 | 00 | Display Letter |
| | 07 | 00 | 00 | Display Bit Map |
| MULTI PART | 08 | 00 | 00 | Multi Part 1 |
| | | | | : |
| | 08 | 0F | 00 | Multi Part 16 |
| | 08 | 10 | 00 | Multi Part 17 |
| | | | | : |
| | 08 | 1F | 00 | Multi Part 32 |
| MULTI PART (additional) | 0A | 00 | 00 | Multi Part 1 |
| | | | | : |
| | 0A | 0F | 00 | Multi Part 16 |
| | 0A | 10 | 00 | Multi Part 17 |
| | | | | : |
| | 0A | 1F | 00 | Multi Part 32 |
| A/D PART | 10 | 00 | 00 | A/D Part 1 |
| | 10 | 01 | 00 | A/D Part 2 |
| A/D SYSTEM | 11 | 00 | 00 | A/D System |
| DRUM | 30 | 0D | 00 | Drum Setup 1 |
| | 31 | 0D | 00 | Drum Setup 2 |
| | 32 | 0D | 00 | Drum Setup 3 |
| | 33 | 0D | 00 | Drum Setup 4 |
| PART ASSIGN | 70 | 00 | 00 | VL Part Assign |

| Address | | | Parameter |
|---|---|---|---|
| 3n | 0D | 00 | note number 13 |
| 3n | 0E | 00 | note number 14 |
| | : | | : |
| 3n | 5B | 00 | note number 91 |

## < Table 1 - 2 >

MIDI Parameter Change table (XG SYSTEM)

| Address (H) | | | Size (H) | Data (H) | Parameter | Description | Default value (H) |
|---|---|---|---|---|---|---|---|
| 00 | 00 | 00 | 4 | 00 - 0F | MASTER TUNE | -102.4...0...+102.3 [cent] | 00 04 00 00 |
| | | 01 | | 00 - 0F | | 1st bit3-0→bit15-12 | |
| | | 02 | | 00 - 0F | | 2nd bit3-0→bit11-8 | |
| | | 03 | | 00 - 0F | | 3rd bit3-0→bit7-4 | |
| | | | | | | 4th bit3-0→bit3-0 | |
| | | 04 | 1 | 00 - 7F | MASTER VOLUME | 0...127 | 7F |
| | | 05 | 1 | 00 - 7F | MASTER ATTENUATOR | 0...127 | 00 |
| | | 06 | 1 | 28 - 58 | TRANSPOSE | -24...0...+24 [semitones] | 40 |
| | | 7D | 1 | N | DRUM SETUP RESET | N: Drum setup number (receive only) | -- |
| | | 7E | 1 | 00 | XG SYSTEM ON | 00 = XG system ON (receive only) | -- |
| | | 7F | 1 | 00 | ALL PARAMETER RESET | 00 = ON (receive only) | -- |
| TOTAL SIZE | | | 07 | | | | |

## < Table 1 - 3 >

MIDI Parameter Change table (SYSTEM INFORMATION)

| Address (H) | | | Size (H) | Data (H) | Parameter | |
|---|---|---|---|---|---|---|
| 01 | 00 | 00 | E | 20 - 7F | Model Name 1 | 32...127(ASCII CHARACTER) |
| | | : | : | : | : | : |
| | | 0D | | 20 - 7F | Model Name 14 | 32...127 (ASCII CHARACTER) |
| | | 0E | 1 | 00 - 7F | XG Level 1 | |
| | | 0F | 1 | 00 - 7F | XG Level 2 | |
| TOTAL SIZE | | | 10 | | | |

Transmitted in response to Dump Request. Not received.

## < Table 1 - 4 >

MIDI Parameter Change table (EFFECT 1)

| Address (H) | | | Size (H) | Data (H) | Parameter | Description | Default value (H) |
|---|---|---|---|---|---|---|---|
| 02 | 01 | 00 | 2 | 00 - 7F | REVERB TYPE MSB | refer to Effect Program List | 01 (= HALL1) |
| | | | | 00 - 7F | REVERB TYPE LSB | - | 00 |
| | | 02 | 1 | 00 - 7F | REVERB PARAMETER 1 | - | 12 (depends on reverb type) |
| | | 03 | 1 | 00 - 7F | REVERB PARAMETER 2 | - | 0A (-) |
| | | 04 | 1 | 00 - 7F | REVERB PARAMETER 3 | - | 08 (-) |
| | | 05 | 1 | 00 - 7F | REVERB PARAMETER 4 | - | 0D (-) |
| | | 06 | 1 | 00 - 7F | REVERB PARAMETER 5 | - | 31 (-) |
| | | 07 | 1 | 00 - 7F | REVERB PARAMETER 6 | - | 00 (-) |
| | | 08 | 1 | 00 - 7F | REVERB PARAMETER 7 | - | 00 (-) |
| | | 09 | 1 | 00 - 7F | REVERB PARAMETER 8 | - | 00 (-) |
| | | 0A | 1 | 00 - 7F | REVERB PARAMETER 9 | - | 00 (-) |
| | | 0B | 1 | 00 - 7F | REVERB PARAMETER 10 | - | 00 (-) |
| | | 0C | 1 | 00 - 7F | REVERB RETURN | -∞dB...0dB...+6dB (0...96...127) | 40 |
| | | 0D | 1 | 01 - 7F | REVERB PAN | L63...C...R63 | 40 |
| TOTAL SIZE | | | 0E | | | | |
| 02 | 01 | 10 | 1 | 00 - 7F | REVERB PARAMETER 11 | refer to Effect Parameter List | 00 (depends on reverb type) |
| | | 11 | 1 | 00 - 7F | REVERB PARAMETER 12 | - | 04 (-) |
| | | 12 | 1 | 00 - 7F | REVERB PARAMETER 13 | - | 32 (-) |
| | | 13 | 1 | 00 - 7F | REVERB PARAMETER 14 | - | 08 (-) |
| | | 14 | 1 | 00 - 7F | REVERB PARAMETER 15 | - | 40 (-) |
| | | 15 | 1 | 00 - 7F | REVERB PARAMETER 16 | - | 00 (-) |
| TOTAL | | | SIZE 6 | | | | |
| 02 | 01 | 20 | 2 | 00 - 7F | CHORUS TYPE MSB | refer to Effect Program List | 41 (= CHORUS1) |
| | | | | 00 - 7F | CHORUS TYPE LSB | - | 00 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | 22 | 1 | 00 - 7F | CHORUS PARAMETER 1 | - | 06 (depends on chorus type) |
| | | 23 | 1 | 00 - 7F | CHORUS PARAMETER 2 | - | 36 (-) |
| | | 24 | 1 | 00 - 7F | CHORUS PARAMETER 3 | - | 4D (-) |
| | | 25 | 1 | 00 - 7F | CHORUS PARAMETER 4 | - | 6A (-) |
| | | 26 | 1 | 00 - 7F | CHORUS PARAMETER 5 | - | 00 (-) |
| | | 27 | 1 | 00 - 7F | CHORUS PARAMETER 6 | - | 1C (-) |
| | | 28 | 1 | 00 - 7F | CHORUS PARAMETER 7 | - | 40 (-) |
| | | 29 | 1 | 00 - 7F | CHORUS PARAMETER 8 | - | 2E (-) |
| | | 2A | 1 | 00 - 7F | CHORUS PARAMETER 9 | - | 40 (-) |
| | | 2B | 1 | 00 - 7F | CHORUS PARAMETER 10 | - | 40 (-) |
| | | 2C | 1 | 00 - 7F | CHORUS RETURN | -∞dB...0dB...+6dB (0...96...127) | 40 |
| | | 2D | 1 | 01 - 7F | CHORUS PAN | L63...C...R63 (1...64...127) | 40 |
| | | 2E | 1 | 00 - 7F | SEND CHORUS TO REVERB | -∞dB...0dB...+6dB (0...96...127) | 00 |
| TOTAL SIZE | | 0F | | | | | |
| 02 | 01 | 30 | 1 | 00 - 7F | CHORUS PARAMETER 11 | refer to Effect Parameter List | 2E (depends on chorus type) |
| | | 31 | 1 | 00 - 7F | CHORUS PARAMETER 12 | - | 40 (-) |
| | | 32 | 1 | 00 - 7F | CHORUS PARAMETER 13 | - | 0A (-) |
| | | 33 | 1 | 00 - 7F | CHORUS PARAMETER 14 | - | 00 (-) |
| | | 34 | 1 | 00 - 7F | CHORUS PARAMETER 15 | - | 00 (-) |
| | | 35 | 1 | 00 - 7F | CHORUS PARAMETER 16 | - | 00 (-) |
| TOTAL SIZE | | 6 | | | | | |
| 02 | 01 | 40 | 2 | 00 - 7F | VARIATION TYPE MSB | refer to Effect Program List | 05 (= DELAY L, C, R) |
| | | | | 00 - 7F | VARIATION TYPE LSB | - | 00 |
| | | 42 | 2 | 00 - 7F | VARIATION PARAMETER 1 MSB | - | 1A (depends on variation type) |
| | | | | 00 - 7F | VARIATION PARAMETER 1 LSB | - | 05 (-) |
| | | 44 | 2 | 00 - 7F | VARIATION PARAMETER 2 MSB | - | 0D (-) |
| | | | | 00 - 7F | VARIATION PARAMETER 2 LSB | - | 03 (-) |
| | | 46 | 2 | 00 - 7F | VARIATION PARAMETER 3 MSB | - | 27 (-) |
| | | | | 00 - 7F | VARIATION PARAMETER 3 LSB | - | 08 (-) |
| | | 48 | 2 | 00 - 7F | VARIATION PARAMETER 4 MSB | - | 27 (-) |
| | | | | 00 - 7F | VARIATION PARAMETER 4 LSB | - | 08 (-) |
| | | 4A | 2 | 00 - 7F | VARIATION PARAMETER 5 MSB | - | 00 (-) |
| | | | | 00 - 7F | VARIATION PARAMETER 5 LSB | - | 4A (-) |
| | | 4C | 2 | 00 - 7F | VARIATION PARAMETER 6 MSB | - | 00 (-) |
| | | | | 00 - 7F | VARIATION PARAMETER 6 LSB | - | 64 (-) |
| | | 4E | 2 | 00 - 7F | VARIATION PARAMETER 7 MSB | - | 00 (-) |
| | | | | 00 - 7F | VARIATION PARAMETER 7 LSB | - | 0A (-) |
| | | 50 | 2 | 00 - 7F | VARIATION PARAMETER 8 MSB | - | 00 (-) |
| | | | | 00 - 7F | VARIATION PARAMETER 8 LSB | - | 00 (-) |
| | | 52 | 2 | 00 - 7F | VARIATION PARAMETER 9 MSB | - | 00 (-) |
| | | | | 00 - 7F | VARIATION PARAMETER 9 LSB | - | 00 (-) |
| | | 54 | 2 | 00 - 7F | VARIATION PARAMETER 10 MSB | - | 00 (-) |
| | | | | 00 - 7F | VARIATION PARAMETER 10 LSB | - | 20 (-) |
| | | 56 | 1 | 00 - 7F | VARIATION RETURN | -∞dB...0dB...+6dB (0...96...127) | 40 |
| | | 57 | 1 | 01 - 7F | VARIATION PAN | L63...C...R63 (1...64...127) | 40 |
| | | 58 | 1 | 00 - 7F | SEND VARIATION TO REVERB | -∞dB...0dB...+6dB (0...96...127) | 00 |
| | | 59 | 1 | 00 - 7F | SEND VARIATION TO CHORUS | -∞dB...0dB...+6dB (0...96...127) | 00 |
| | | 5A | 1 | 00 - 01 | VARIATION CONNECTION | INSERTION, SYSTEM | 00 |
| | | 5B | 1 | 00 - 7F | VARIATION PART NUMBER | Part1...32 (0...31)<br>AD1, AD2 (64, 65)<br>OFF (127) | 7F |
| | | 5C | 1 | 00 - 7F | MW VARIATION CONTROL DEPTH | -64...0...+63 | 40 |
| | | 5D | 1 | 00 - 7F | BEND VARIATION CONTROL DEPTH | -64...0...+63 | 40 |
| | | 5E | 1 | 00 - 7F | CAT VARIATION CONTROL DEPTH | -64...0...+63 | 40 |
| | | 5F | 1 | 00 - 7F | AC1 VARIATION CONTROL DEPTH | -64...0...+63 | 40 |
| | | 60 | 1 | 00 - 7F | AC2 VARIATION CONTROL DEPTH | -64...0...+63 | 40 |
| TOTAL SIZE | | 21 | | | | | |
| 02 | 01 | 70 | 1 | 00 - 7F | VARIATION PARAMETER 11 | refer to Effect Parameter List | 00 (depends on variation type) |
| | | 71 | 1 | 00 - 7F | VARIATION PARAMETER 12 | - | 3C (-) |
| | | 72 | 1 | 00 - 7F | VARIATION PARAMETER 13 | - | 1C (-) |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | 73 | 1 | 00 - 7F | VARIATION PARAMETER 14 | " | 40 (") |
| | | 74 | 1 | 00 - 7F | VARIATION PARAMETER 15 | " | 2E (") |
| | | 75 | 1 | 00 - 7F | VARIATION PARAMETER 16 | " | 40 (") |
| TOTAL SIZE | | | 6 | | | | |

## < Table 1 - 5 >

MIDI Parameter Change table (MULTI EQ)

| Address (H) | | | Size (H) | Data (H) | Parameter | Description | Default value (H) |
|---|---|---|---|---|---|---|---|
| 02 | 40 | 00 | 1 | 00 - 04 | EQ TYPE | flat, jazz, pops, rock, classic | 00 |
| | | 01 | 1 | 34 - 4C | EQ GAIN1 | -12...0...+12 [dB] | 40 (depends on EQ type) |
| | | 02 | 1 | 04 - 28 | EQ FREQUENCY1 | 32...2.0k [Hz] | 0C (") |
| | | 03 | 1 | 01 - 78 | EQ Q1 | 0.1...12.0 | 07 (") |
| | | 04 | 1 | 00 - 01 | EQ SHAPE1 | shelving, peaking | 00 (") |
| | | 05 | 1 | 34 - 4C | EQ GAIN2 | -12...0...+12 [dB] | 40 (") |
| | | 06 | 1 | 0E - 36 | EQ FREQUENCY2 | 100...10.0k [Hz] | 1C (") |
| | | 07 | 1 | 01 - 78 | EQ Q2 | 0.1...12.0 | 07 (") |
| | | 08 | 1 | | NOT USED | | -- |
| | | 09 | 1 | 34 - 4C | EQ GAIN3 | -12...0...+12 [dB] | 40 (") |
| | | 0A | 1 | 0E - 36 | EQ FREQUENCY3 | 100...10.0k [Hz] | 22 (") |
| | | 0B | 1 | 01 - 78 | EQ Q3 | 0.1...12.0 | 07 (") |
| | | 0C | 1 | | NOT USED | | -- |
| | | 0D | 1 | 34 - 4C | EQ GAIN4 | -12...0...+12 [dB] | 40 (") |
| | | 0E | 1 | 0E - 36 | EQ FREQUENCY4 | 100...10.0k [Hz] | 2E (") |
| | | 0F | 1 | 01 - 78 | EQ Q4 | 0.1...12.0 | 07 (") |
| | | 10 | 1 | | NOT USED | | -- |
| | | 11 | 1 | 34 - 4C | EQ GAIN5 | -12...0...+12 [dB] | 40 (") |
| | | 12 | 1 | 1C - 3A | EQ FREQUENCY5 | 0.5k...16.0k [Hz] | 34 (") |
| | | 13 | 1 | 01 - 78 | EQ Q5 | 0.1...12.0 | 07 (") |
| | | 14 | 1 | 00 - 01 | EQ SHAPE5 | shelving, peaking | 00 (") |
| TOTAL SIZE | | | 15 | | | | |

## < Table 1 - 6 >

MIDI Parameter Change table (EFFECT 2)

| Address (H) | | | Size (H) | Data (H) | Parameter | Description | Default value (H) |
|---|---|---|---|---|---|---|---|
| 03 | 00 | 00 | 2 | 00 - 7F | INSERTION EFFECT1 TYPE MSB | refer to Effect Program List | 49 (= DISTORTION) |
| | | | | 00 - 7F | INSERTION EFFECT1 TYPE LSB | " | 00 |
| | | 02 | 1 | 00 - 7F | INSERTION EFFECT1 PARAMETER1 | " | 28 (depends on insertion effect1 type) |
| | | 03 | 1 | 00 - 7F | INSERTION EFFECT1 PARAMETER2 | " | 14 (") |
| | | 04 | 1 | 00 - 7F | INSERTION EFFECT1 PARAMETER3 | " | 48 (") |
| | | 05 | 1 | 00 - 7F | INSERTION EFFECT1 PARAMETER4 | " | 35 (") |
| | | 06 | 1 | 00 - 7F | INSERTION EFFECT1 PARAMETER5 | " | 40 (") |
| | | 07 | 1 | 00 - 7F | INSERTION EFFECT1 PARAMETER6 | " | 00 (") |
| | | 08 | 1 | 00 - 7F | INSERTION EFFECT1 PARAMETER7 | " | 2B (") |
| | | 09 | 1 | 00 - 7F | INSERTION EFFECT1 PARAMETER8 | " | 4A (") |
| | | 0A | 1 | 00 - 7F | INSERTION EFFECT1 PARAMETER9 | " | 0A (") |
| | | 0B | 1 | 00 - 7F | INSERTION EFFECT1 PARAMETER10 | " | 7F (") |
| | | 0C | 1 | 00 - 7F | INSERTION EFFECT1 PART NUMBER | Part1...32 (0...31)<br>AD1, AD2 (64, 65)<br>OFF (127) | 7F |
| | | 0D | 1 | 00 - 7F | MW INSERTION CONTROL DEPTH | -64...0...+63 | 40 |
| | | 0E | 1 | 00 - 7F | BEND INSERTION CONTROL DEPTH | -64...0...+63 | 40 |
| | | 0F | 1 | 00 - 7F | CAT INSERTION CONTROL DEPTH | -64...0...+63 | 40 |
| | | 10 | 1 | 00 - 7F | AC1 INSERTION CONTROL DEPTH | -64...0...+63 | 40 |
| | | 11 | 1 | 00 - 7F | AC2 INSERTION CONTROL DEPTH | -64...0...+63 | 40 |
| TOTAL SIZE | | | 12 | | | | |
| | | 20 | 1 | 00 - 7F | INSERTION EFFECT1 PARAMETER11 | refer to Effect Parameter List | 78 (depends on insertion effect1 type) |
| | | 21 | 1 | 00 - 7F | INSERTION EFFECT1 PARAMETER12 | " | 00 (") |
| | | 22 | 1 | 00 - 7F | INSERTION EFFECT1 PARAMETER13 | " | 00 (") |
| | | 23 | 1 | 00 - 7F | INSERTION EFFECT1 PARAMETER14 | " | 00 (") |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | 24 | 1 | 00 - 7F | INSERTION EFFECT1 PARAMETER15 | - | 00 (-) |
| | | 25 | 1 | 00 - 7F | INSERTION EFFECT1 PARAMETER16 | - | 00 (-) |
| TOTAL SIZE | | | 6 | | | | |
| | | 30 | 2 | 00 - 7F | INSERTION EFFECT1 PARAMETER1 MSB | refer to Effect Parameter List | 00 (depends on insertion effect1 type) |
| | | | | 00 - 7F | INSERTION EFFECT1 PARAMETER1 LSB | - | 28 (-) |
| | | 32 | 2 | 00 - 7F | INSERTION EFFECT1 PARAMETER2 MSB | - | 00 (-) |
| | | | | 00 - 7F | INSERTION EFFECT1 PARAMETER2 LSB | - | 14 (-) |
| | | 34 | 2 | 00 - 7F | INSERTION EFFECT1 PARAMETER3 MSB | - | 00 (-) |
| | | | | 00 - 7F | INSERTION EFFECT1 PARAMETER3 LSB | - | 48 (-) |
| | | 36 | 2 | 00 - 7F | INSERTION EFFECT1 PARAMETER4 MSB | - | 00 (-) |
| | | | | 00 - 7F | INSERTION EFFECT1 PARAMETER4 LSB | - | 35 (-) |
| | | 38 | 2 | 00 - 7F | INSERTION EFFECT1 PARAMETER5 MSB | - | 00 (-) |
| | | | | 00 - 7F | INSERTION EFFECT1 PARAMETER5 LSB | - | 40 (-) |
| | | 3A | 2 | 00 - 7F | INSERTION EFFECT1 PARAMETER6 MSB | - | 00 (-) |
| | | | | 00 - 7F | INSERTION EFFECT1 PARAMETER6 LSB | - | 00 (-) |
| | | 3C | 2 | 00 - 7F | INSERTION EFFECT1 PARAMETER7 MSB | - | 00 (-) |
| | | | | 00 - 7F | INSERTION EFFECT1 PARAMETER7 LSB | - | 2B (-) |
| | | 3E | 2 | 00 - 7F | INSERTION EFFECT1 PARAMETER8 MSB | - | 00 (-) |
| | | | | 00 - 7F | INSERTION EFFECT1 PARAMETER8 LSB | - | 4A (-) |
| | | 40 | 2 | 00 - 7F | INSERTION EFFECT1 PARAMETER9 MSB | - | 00 (-) |
| | | | | 00 - 7F | INSERTION EFFECT1 PARAMETER9 LSB | - | 0A (-) |
| | | 42 | 2 | 00 - 7F | INSERTION EFFECT1 PARAMETER10 MSB | - | 00(-) |
| | | | | 00 - 7F | INSERTION EFFECT1 PARAMETER10 LSB | - | 7F (-) |
| TOTAL SIZE | | | 14 | | | | |

When using an EFFECT TYPE which does not require the MSB, parameters of addresses 02~0B are received, and parameters of addresses 30~42 are not received.
When using an EFFECT TYPE which requires the MSB, parameters of addresses 30~42 are received, and parameters of addresses 02~0B are not received.
Bulk data which includes the EFFECT TYPE is always transmitted with the parameters of addresses 02~0B, but in the case of an EFFECT TYPE which requires the MSB, parameters of addresses 02~0B are not received even for bulk reception.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 03 | 01 | 00 | 2 | 00 - 7F | INSERTION EFFECT2 TYPE MSB | refer to Effect Program List | 49 (= DISTORTION) |
| | | | | 00 - 7F | INSERTION EFFECT2 TYPE LSB | - | 00 |
| | | 02 | 1 | 00 - 7F | INSERTION EFFECT2 PARAMETER1 | - | 28(depends on insertion effect2 type) |
| | | 03 | 1 | 00 - 7F | INSERTION EFFECT2 PARAMETER2 | - | 14 (-) |
| | | 04 | 1 | 00 - 7F | INSERTION EFFECT2 PARAMETER3 | - | 48 (-) |
| | | 05 | 1 | 00 - 7F | INSERTION EFFECT2 PARAMETER4 | - | 35 (-) |
| | | 06 | 1 | 00 - 7F | INSERTION EFFECT2 PARAMETER5 | - | 40 (-) |
| | | 07 | 1 | 00 - 7F | INSERTION EFFECT2 PARAMETER6 | - | 00 (-) |
| | | 08 | 1 | 00 - 7F | INSERTION EFFECT2 PARAMETER7 | - | 2B (-) |
| | | 09 | 1 | 00 - 7F | INSERTION EFFECT2 PARAMETER8 | - | 4A (-) |
| | | 0A | 1 | 00 - 7F | INSERTION EFFECT2 PARAMETER9 | - | 0A (-) |
| | | 0B | 1 | 00 - 7F | INSERTION EFFECT2 PARAMETER10 | - | 7F (-) |
| | | 0C | 1 | 00 - 7F | INSERTION EFFECT2 PART NUMBER | Part1...32 (0...31)<br>AD1, AD2 (64, 65)<br>OFF (127) | 7F |
| | | 0D | 1 | 00 - 7F | MW INSERTION CONTROL DEPTH | -64...0...+63 | 40 |
| | | 0E | 1 | 00 - 7F | BEND INSERTION CONTROL DEPTH | -64...0...+63 | 40 |
| | | 0F | 1 | 00 - 7F | CAT INSERTION CONTROL DEPTH | -64...0...+63 | 40 |
| | | 10 | 1 | 00 - 7F | AC1 INSERTION CONTROL DEPTH | -64...0...+63 | 40 |
| | | 11 | 1 | 00 - 7F | AC2 INSERTION CONTROL DEPTH | -64...0...+63 | 40 |
| TOTAL SIZE | | | 12 | | | | |
| | | 20 | 1 | 00 - 7F | INSERTION EFFECT2 PARAMETER11 | refer to Effect Parameter List | 78 (depends on insertion effect2 type) |
| | | 21 | 1 | 00 - 7F | INSERTION EFFECT2 PARAMETER12 | - | 00 (-) |
| | | 22 | 1 | 00 - 7F | INSERTION EFFECT2 PARAMETER13 | - | 00 (-) |
| | | 23 | 1 | 00 - 7F | INSERTION EFFECT2 PARAMETER14 | - | 00 (-) |
| | | 24 | 1 | 00 - 7F | INSERTION EFFECT2 PARAMETER15 | - | 00 (-) |
| | | 25 | 1 | 00 - 7F | INSERTION EFFECT2 PARAMETER16 | - | 00 (-) |
| TOTAL SIZE | | | 6 | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | 30 | 2 | 00 - 7F | INSERTION EFFECT2 PARAMETER1 MSB | refer to Effect Parameter List | 00 (depends on insertion effect2 type) |
| | | | 00 - 7F | INSERTION EFFECT2 PARAMETER1 LSB | " | 28 (") |
| | 32 | 2 | 00 - 7F | INSERTION EFFECT2 PARAMETER2 MSB | " | 00 (") |
| | | | 00 - 7F | INSERTION EFFECT2 PARAMETER2 LSB | " | 14 (") |
| | 34 | 2 | 00 - 7F | INSERTION EFFECT2 PARAMETER3 MSB | " | 00 (") |
| | | | 00 - 7F | INSERTION EFFECT2 PARAMETER3 LSB | " | 48 (") |
| | 36 | 2 | 00 - 7F | INSERTION EFFECT2 PARAMETER4 MSB | " | 00 (") |
| | | | 00 - 7F | INSERTION EFFECT2 PARAMETER4 LSB | " | 35 (") |
| | 38 | 2 | 00 - 7F | INSERTION EFFECT2 PARAMETER5 MSB | " | 00 (") |
| | | | 00 - 7F | INSERTION EFFECT2 PARAMETER5 LSB | " | 40 (") |
| | 3A | 2 | 00 - 7F | INSERTION EFFECT2 PARAMETER6 MSB | " | 00 (") |
| | | | 00 - 7F | INSERTION EFFECT2 PARAMETER6 LSB | " | 00 (") |
| | 3C | 2 | 00 - 7F | INSERTION EFFECT2 PARAMETER7 MSB | " | 00 (") |
| | | | 00 - 7F | INSERTION EFFECT2 PARAMETER7 LSB | " | 2B (") |
| | 3E | 2 | 00 - 7F | INSERTION EFFECT2 PARAMETER8 MSB | " | 00 (") |
| | | | 00 - 7F | INSERTION EFFECT2 PARAMETER8 LSB | " | 4A (") |
| | 40 | 2 | 00 - 7F | INSERTION EFFECT2 PARAMETER9 MSB | " | 00 (") |
| | | | 00 - 7F | INSERTION EFFECT2 PARAMETER9 LSB | " | 0A (") |
| | 42 | 1 | 00 - 7F | INSERTION EFFECT2 PARAMETER10 MSB | " | 00 (") |
| | | | 00 - 7F | INSERTION EFFECT2 PARAMETER10 LSB | " | 7F (") |
| TOTAL SIZE | | 14 | | | | |

When using an EFFECT TYPE which does not require the MSB, parameters of addresses 02~0B are received, and parameters of addresses 30~42 are not received.
When using an EFFECT TYPE which requires the MSB, parameters of addresses 30~42 are received, and parameters of addresses 02~0B are not received.
Transmission of bulk data which includes EFFECT TYPE data will always include the parameters of addresses 02~0B, but in the case of an EFFECT TYPE which does not require the MSB, parameters of addresses 02~0B will not be received even in bulk reception.

## < Table 1 - 7 >

MIDI Parameter Change table (UNIQUE EFFECT)

| Address (H) | | | Size (H) | Data (H) | Parameter | Description | Default value (H) |
|---|---|---|---|---|---|---|---|
| 04 | 00 | 00 | 2 | 00 - 7F | UNIQUE INSERTION EFFECT TYPE MSB | Refer to XG EFFECT MAP | 59 (=Vocoder harmony) |
| | | | | 00 - 7F | UNIQUE INSERTION EFFECT TYPE LSB | 00 : basic type | 00 |
| | | 02 | 1 | 00 - 7F | UNIQUE INSERTION EFFECT PARAMETER1 | Refer to Effect parameter list | depends on type |
| | | 03 | 1 | 00 - 7F | UNIQUE INSERTION EFFECT PARAMETER2 | " | " |
| | | 04 | 1 | 00 - 7F | UNIQUE INSERTION EFFECT PARAMETER3 | " | " |
| | | 05 | 1 | 00 - 7F | UNIQUE INSERTION EFFECT PARAMETER4 | " | " |
| | | 06 | 1 | 00 - 7F | UNIQUE INSERTION EFFECT PARAMETER5 | " | " |
| | | 07 | 1 | 00 - 7F | UNIQUE INSERTION EFFECT PARAMETER6 | " | " |
| | | 08 | 1 | 00 - 7F | UNIQUE INSERTION EFFECT PARAMETER7 | " | " |
| | | 09 | 1 | 00 - 7F | UNIQUE INSERTION EFFECT PARAMETER8 | " | " |
| | | 0A | 1 | 00 - 7F | UNIQUE INSERTION EFFECT PARAMETER9 | " | " |
| | | 0B | 1 | 00 - 7F | UNIQUE INSERTION EFFECT PARAMETER10 | " | " |
| | | 0C | 1 | 00 - 7F | UNIQUE INSERTION EFFECT PART | Part1...32 (0...31)<br>AD1, AD2 (64, 65)<br>OFF (127) | 7F |
| | | 0D | 1 | | NOT USED | | -- |
| | | 0E | 1 | | NOT USED | | -- |
| | | 0F | 1 | | NOT USED | | -- |
| | | 10 | 1 | | NOT USED | | -- |
| | | 11 | 1 | | NOT USED | | -- |
| TOTAL SIZE | | | 12 | | | | |
| 04 | 00 | 14 | 1 | 00 - 7F | UNIQUE INSERTION EFFECT EXTERNAL CONTROL CH1 (HARMONY CHANNEL) | 1...16 (0...15), off (127) | 7F |
| | | 15 | 1 | 00 - 7F | UNIQUE INSERTION EFFECT EXTERNAL CONTROL CH2 (MELODY CHANNEL) | " | 7F |
| TOTAL SIZE | | | 2 | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 04 | 00 | 20 | 1 | 00 - 7F | UNIQUE INSERTION EFFECT PARAMETER11 | Refer to Effect parameter list | depends on type |
| | | 21 | 1 | 00 - 7F | UNIQUE INSERTION EFFECT PARAMETER12 | " | " |
| | | 22 | 1 | 00 - 7F | UNIQUE INSERTION EFFECT PARAMETER13 | " | " |
| | | 23 | 1 | 00 - 7F | UNIQUE INSERTION EFFECT PARAMETER14 | " | " |
| | | 24 | 1 | 00 - 7F | UNIQUE INSERTION EFFECT PARAMETER15 | " | " |
| | | 25 | 1 | 00 - 7F | UNIQUE INSERTION EFFECT PARAMETER16 | " | " |
| TOTAL SIZE | | | 6 | | | | |

## < Table 1 - 8 >

MIDI Parameter Change table (DISPLAY DATA)

| Address (H) | | | Size (H) | Data (H) | Parameter | Description | Default value (H) |
|---|---|---|---|---|---|---|---|
| 06 | 00 | 00 | 20 | 20 - 7F | DISPLAY LETTER Data1 | 32...127(ASCII CHARACTER) | -- |
| | | : | | | : | : | : |
| | | 1F | | | DISPLAY LETTER Data32 | 32...127(ASCII CHARACTER) | -- |
| TOTAL SIZE | | | 20 | | | | |
| 07 | 00 | 00 | 30 | 00 - 7F | DISPLAY BITMAP Data1 * | 0...127 | -- |
| | | : | | | : | : | : |
| | | 2F | | | DISPLAY BITMAP Data48 | 0...127 | -- |
| TOTAL SIZE | | | 30 | | | | |

* The relation between DISPLAY BITMAP data and the display screen

Seven pixels horizontally are one byte of data.

Set a bit to 1 to display the corresponding pixel, and set a bit to 0 to turn it off.

This data is mapped to the screen as follows.

| | b7 b6 b5 b4 b3 b2 b1 b0 | b7 b6 b5 b4 b3 b2 b1 b0 | b7 b6 b5 b4 b3 b2 b1 b0 ('b' stands for 'bit') |
|---|---|---|---|
| Data1 | 0 * * * * * * * | Data17 0 * * * * * * * | Data33 0 * * - - - - - |
| Data2 | | Data18 | Data34 |
| Data3 | | Data19 | Data35 |
| Data4 | | Data20 | Data36 |
| Data5 | | Data21 | Data37 |
| Data6 | | Data22 | Data38 |
| Data7 | | Data23 | Data39 |
| Data8 | | Data24 | Data40 |
| Data9 | | Data25 | Data41 |
| Data10 | | Data26 | Data42 |
| Data11 | | Data27 | Data43 |
| Data12 | | Data28 | Data44 |
| Data13 | | Data29 | Data45 |
| Data14 | | Data30 | Data46 |
| Data15 | | Data31 | Data47 |
| Data16 | | Data32 | Data48 |

For Data33~Data48, only bit 6 and bit 5 are used.

Specific individual pixels of the bitmap data can also be received. In this case, other pixels will retain their previous state.

DISPLAY DATA parameter changes can be transmitted continuously from a specified location.

## < Table 1 - 9 >

MIDI Parameter Change table (MULTI PART)

| Address (H) | | | Size (H) | Data (H) | Parameter | Description | Default value (H) |
|---|---|---|---|---|---|---|---|
| 08 | nn | 00 | 1 | 00 - 40 | ELEMENT RESERVE | 0...64 (Not valid for VL) | part10, 26 = 0<br>other parts =2 |
| | nn | 01 | 1 | 00 - 7F | BANK SELECT MSB | 0...127 | part10,26 = 7F<br>other parts = 0 |
| | nn | 02 | 1 | 00 - 7F | BANK SELECT LSB | 0...127 | 00 |
| | nn | 03 | 1 | 00 - 7F | PROGRAM NUMBER | 1...128 | 00 |
| | nn | 04 | 1 | 00-1F, 7F | Rcv CHANNEL | A1...A16, B1...B16, OFF | Part No. |

| | | | | | | |
|---|---|---|---|---|---|---|
| nn | 05 | 1 | 00 - 01 | MONO/POLY MODE | MONO , POLY | 01 |
| nn | 06 | 1 | 00 - 02 | SAME NOTE NUMBER KEY ON ASSIGN | SINGLE, MULTI, INST(for DRUM) (Not valid for VL) | 01 |
| nn | 07 | 1 | 00 - 05 | PART MODE | NORMAL, DRUM, DRUMS1...4 | Part10 = 2, Part26 = 4 other parts = 0 |
| nn | 08 | 1 | 28 - 58 | NOTE SHIFT | -24...0...+24 [semitones] | 40 |
| nn | 09 | 2 | 00 - 0F | DETUNE | -12.8...0...+12.7 [Hz] | 08 00 |
| nn | 0A | | 00 - 0F | | 1st bit3-0→bit7-4<br>2nd bit3-0→bit3-0 | |
| nn | 0B | 1 | 00 - 7F | VOLUME | 0...127 | 64 |
| nn | 0C | 1 | 00 - 7F | VELOCITY SENSE DEPTH | 0...127 | 40 |
| nn | 0D | 1 | 00 - 7F | VELOCITY SENSE OFFSET | 0...127 | 40 |
| nn | 0E | 1 | 00 - 7F | PAN | RND, L63...C...R63 | 40 |
| nn | 0F | 1 | 00 - 7F | NOTE LIMIT LOW | C-2...G8 | 00 |
| nn | 10 | 1 | 00 - 7F | NOTE LIMIT HIGH | C-2...G8 | 7F |
| nn | 11 | 1 | 00 - 7F | DRY LEVEL | 0...127 | 7F |
| nn | 12 | 1 | 00 - 7F | CHORUS SEND | 0...127 | 00 |
| nn | 13 | 1 | 00 - 7F | REVERB SEND | 0...127 | 28 |
| nn | 14 | 1 | 00 - 7F | VARIATION SEND | 0...127 | 00 |
| nn | 15 | 1 | 00 - 7F | VIBRATO RATE | -64...0...+63 | 40 |
| nn | 16 | 1 | 00 - 7F | VIBRATO DEPTH | -64...0...+63 | 40 |
| nn | 17 | 1 | 00 - 7F | VIBRATO DELAY | -64...0...+63 | 40 |
| nn | 18 | 1 | 00 - 7F | LOW PASS FILTER CUTOFF FREQUENCY | -64...0...+63 | 40 |
| nn | 19 | 1 | 00 - 7F | LOW PASS FILTER RESONANCE | -64...0...+63 | 40 |
| nn | 1A | 1 | 00 - 7F | EG ATTACK TIME | -64...0...+63 | 40 |
| nn | 1B | 1 | 00 - 7F | EG DECAY TIME | -64...0...+63 | 40 |
| nn | 1C | 1 | 00 - 7F | EG RELEASE TIME | -64...0...+63 | 40 |
| nn | 1D | 1 | 28 - 58 | MW PITCH CONTROL | -24...0...+24 [semitones] | 40 |
| nn | 1E | 1 | 00 - 7F | MW LOW PASS FILTER CONTROL | -9600...0...+9450[cent] | 40 |
| nn | 1F | 1 | 00 - 7F | MW AMPLITUDE CONTROL | -100...0...+100 [%] | 40 |
| nn | 20 | 1 | 00 - 7F | MW LFO PMOD DEPTH | 0...127 | 0A |
| nn | 21 | 1 | 00 - 7F | MW LFO FMOD DEPTH | 0...127 | 00 |
| nn | 22 | 1 | 00 - 7F | MW LFO AMOD DEPTH | 0...127 (Not valid for VL) | 00 |
| nn | 23 | 1 | 28 - 58 | BEND PITCH CONTROL | -24...0...+24 [semitones] | 42 |
| nn | 24 | 1 | 00 - 7F | BEND LOW PASS FILTER CONTROL | -9600...0...+9450 [cent] | 40 |
| nn | 25 | 1 | 00 - 7F | BEND AMPLITUDE CONTROL | -100...0...+100 [%] | 40 |
| nn | 26 | 1 | 00 - 7F | BEND LFO PMOD DEPTH | 0...127 | 00 |
| nn | 27 | 1 | 00 - 7F | BEND LFO FMOD DEPTH | 0...127 | 00 |
| nn | 28 | 1 | 00 - 7F | BEND LFO AMOD DEPTH | 0...127 (Not valid for VL) | 00 |
| TOTAL SIZE | | 29 | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| nn | 30 | 1 | 00 - 01 | Rcv PITCH BEND | OFF, ON | 01 |
| nn | 31 | 1 | 00 - 01 | Rcv CH AFTER TOUCH (CAT) | OFF, ON | 01 |
| nn | 32 | 1 | 00 - 01 | Rcv PROGRAM CHANGE | OFF, ON | 01 |
| nn | 33 | 1 | 00 - 01 | Rcv CONTROL CHANGE | OFF, ON | 01 |
| nn | 34 | 1 | 00 - 01 | Rcv POLY AFTER TOUCH (PAT) | OFF, ON (Not valid for VL) | 01 |
| nn | 35 | 1 | 00 - 01 | Rcv NOTE MESSAGE | OFF, ON | 01 |
| nn | 36 | 1 | 00 - 01 | Rcv RPN | OFF, ON | 01 |
| nn | 37 | 1 | 00 - 01 | Rcv NRPN | OFF, ON | XGmode = 01, GMmode = 00 |
| nn | 38 | 1 | 00 - 01 | Rcv MODURATION | OFF, ON | 01 |
| nn | 39 | 1 | 00 - 01 | Rcv VOLUME | OFF, ON | 01 |
| nn | 3A | 1 | 00 - 01 | Rcv PAN | OFF, ON | 01 |
| nn | 3B | 1 | 00 - 01 | Rcv EXPRESSION | OFF, ON | 01 |
| nn | 3C | 1 | 00 - 01 | Rcv HOLD1 | OFF, ON | 01 |
| nn | 3D | 1 | 00 - 01 | Rcv PORTAMENTO | OFF, ON | 01 |
| nn | 3E | 1 | 00 - 01 | Rcv SOSTENUTO | OFF, ON (Not valid for VL) | 01 |
| nn | 3F | 1 | 00 - 01 | Rcv SOFT PEDAL | OFF, ON | 01 |
| nn | 40 | 1 | 00 - 01 | Rcv BANK SELECT | OFF, ON | XGmode = 01, GMmode = 00 |
| nn | 41 | 1 | 00 - 7F | SCALE TUNING C | -64...0...+63 [cent] | 40 |
| nn | 42 | 1 | 00 - 7F | SCALE TUNING C# | -64...0...+63 [cent] | 40 |
| nn | 43 | 1 | 00 - 7F | SCALE TUNING D | -64...0...+63 [cent] | 40 |
| nn | 44 | 1 | 00 - 7F | SCALE TUNING D# | -64...0...+63 [cent] | 40 |
| nn | 45 | 1 | 00 - 7F | SCALE TUNING E | -64...0...+63 [cent] | 40 |

| | | | | | | |
|---|---|---|---|---|---|---|
| nn | 46 | 1 | 00 - 7F | SCALE TUNING F | -64...0...+63 [cent] | 40 |
| nn | 47 | 1 | 00 - 7F | SCALE TUNING F# | -64...0...+63 [cent] | 40 |
| nn | 48 | 1 | 00 - 7F | SCALE TUNING G | -64...0...+63 [cent] | 40 |
| nn | 49 | 1 | 00 - 7F | SCALE TUNING G# | -64...0...+63 [cent] | 40 |
| nn | 4A | 1 | 00 - 7F | SCALE TUNING A | -64...0...+63 [cent] | 40 |
| nn | 4B | 1 | 00 - 7F | SCALE TUNING A# | -64...0...+63 [cent] | 40 |
| nn | 4C | 1 | 00 - 7F | SCALE TUNING B | -64...0...+63 [cent] | 40 |
| nn | 4D | 1 | 28 - 58 | CAT PITCH CONTROL | -24...0...+24 [semitones] | 40 |
| nn | 4E | 1 | 00 - 7F | CAT LOW PASS FILTER CONTROL | -9600...0...+9450[cent] | 40 |
| nn | 4F | 1 | 00 - 7F | CAT AMPLITUDE CONTROL | -100...0...+100 [%] | 40 |
| nn | 50 | 1 | 00 - 7F | CAT LFO PMOD DEPTH | 0...127 | 00 |
| nn | 51 | 1 | 00 - 7F | CAT LFO FMOD DEPTH | 0...127 | 00 |
| nn | 52 | 1 | 00 - 7F | CAT LFO AMOD DEPTH | 0...127 (Not valid for VL) | 00 |
| nn | 53 | 1 | 28 - 58 | PAT PITCH CONTROL | -24...0...+24 [semitones] (Not valid for VL) | 40 |
| nn | 54 | 1 | 00 - 7F | PAT LOW PASS FILTER CONTROL | -9600...0...+9450 [cent] (Not valid for VL) | 40 |
| nn | 55 | 1 | 00 - 7F | PAT AMPLITUDE CONTROL | -100...0...+100 [%] (Not valid for VL) | 40 |
| nn | 56 | 1 | 00 - 7F | PAT LFO PMOD DEPTH | 0...127 (Not valid for VL) | 00 |
| nn | 57 | 1 | 00 - 7F | PAT LFO FMOD DEPTH | 0...127 (Not valid for VL) | 00 |
| nn | 58 | 1 | 00 - 7F | PAT LFO AMOD DEPTH | 0...127 (Not valid for VL) | 00 |
| nn | 59 | 1 | 00 - 5F | AC1 CONTROLLER NUMBER | 0...95 | 10 |
| nn | 5A | 1 | 28 - 58 | AC1 PITCH CONTROL | -24...0...+24 [semitones] | 40 |
| nn | 5B | 1 | 00 - 7F | AC1 LOW PASS FILTER CONTROL | -9600...0...+9450 [cent] | 40 |
| nn | 5C | 1 | 00 - 7F | AC1 AMPLITUDE CONTROL | -100...0...+100 [%] | 40 |
| nn | 5D | 1 | 00 - 7F | AC1 LFO PMOD DEPTH | 0...127 | 00 |
| nn | 5E | 1 | 00 - 7F | AC1 LFO FMOD DEPTH | 0...127 | 00 |
| nn | 5F | 1 | 00 - 7F | AC1 LFO AMOD DEPTH | 0...127 (Not valid for VL) | 00 |
| nn | 60 | 1 | 00 - 5F | AC2 CONTROLLER NUMBER | 0...95 (Not valid for VL) | 11 |
| nn | 61 | 1 | 28 - 58 | AC2 PITCH CONTROL | -24...0...+24 [semitones] (Not valid for VL) | 40 |
| nn | 62 | 1 | 00 - 7F | AC2 LOW PASS FILTER CONTROL | -9600...0...+9450 [cent] (Not valid for VL) | 40 |
| nn | 63 | 1 | 00 - 7F | AC2 AMPLITUDE CONTROL | -100...0...+100 [%] (Not valid for VL) | 40 |
| nn | 64 | 1 | 00 - 7F | AC2 LFO PMOD DEPTH | 0...127 (Not valid for VL) | 00 |
| nn | 65 | 1 | 00 - 7F | AC2 LFO FMOD DEPTH | 0...127 (Not valid for VL) | 00 |
| nn | 66 | 1 | 00 - 7F | AC2 LFO AMOD DEPTH | 0...127 (Not valid for VL) | 00 |
| nn | 67 | 1 | 00 - 01 | PORTAMENTO SWITCH | OFF, ON | 00 |
| nn | 68 | 1 | 00 - 7F | PORTAMENTO TIME | 0...127 | 00 |
| nn | 69 | 1 | 00 - 7F | PITCH EG INITIAL LEVEL | -64...0...+63 | 40 |
| nn | 6A | 1 | 00 - 7F | PITCH EG ATTACK TIME | -64...0...+63 | 40 |
| nn | 6B | 1 | 00 - 7F | PITCH EG RELEASE LEVEL | -64...0...+63 | 40 |
| nn | 6C | 1 | 00 - 7F | PITCH EG RELEASE TIME | -64...0...+63 | 40 |
| nn | 6D | 1 | 01 - 7F | VELOCITY LIMIT LOW | 1...127 (Not valid for VL) | 01 |
| nn | 6E | 1 | 01 - 7F | VELOCITY LIMIT HIGH | 1...127 (Not valid for VL) | 7F |
| TOTAL SIZE | | 3F | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| nn | 70 | 1 | 28 - 58 | BEND PITCH LOW CONTROL | -24…+24 [semitone] (VL only) | 3E |
| nn | 71 | 1 | 00 - 7F | FILTER EG DEPTH | -64…+63 (VL only) | 40 |
| nn | 72 | 1 | 00 - 7F | EQ BASS GAIN | -12 - +12 [dB] | 40 |
| nn | 73 | 1 | 00 - 7F | EQ TREBLE GAIN | -12 - +12 [dB] | 40 |
| TOTAL SIZE | | 4 | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| nn | 74 | 1 | | NOT USED | | -- |
| nn | 75 | 1 | | NOT USED | | -- |
| nn | 76 | 1 | 04 - 28 | EQ BASS FREQUENCY | 32...2.0k [Hz] (Not valid for VL) | 0C |
| nn | 77 | 1 | 1C - 3A | EQ TREBLE FREQUENCY | 500...16.0k [Hz] (Not valid for VL) | 36 |
| nn | 78 | 1 | | NOT USED | | -- |
| nn | 79 | 1 | | NOT USED | | -- |
| nn | 7A | 1 | | NOT USED | | -- |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | nn | 7B | 1 | | NOT USED | | -- |
| | nn | 7C | 1 | | NOT USED | | -- |
| | nn | 7D | 1 | | NOT USED | | -- |
| | nn | 7E | 1 | | NOT USED | | -- |
| | nn | 7F | 1 | | NOT USED | | -- |
| TOTAL SIZE | | | 0C | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 09 | 0p | 00 | 1 | 00 - 01 | NOTE ASSIGN | OFF/ON | 01 |
| | | 01 | 1 | | NOT USED | | -- |
| | | 02 | 1 | | NOT USED | | -- |
| | | 03 | 1 | 00 - 62 | PRESSURE CONTROL NO. | off - 95, AT, VELOCITY, PB | 00 |
| | | 04 | 1 | 00 - 7F | DEPTH | -64...+63 | 40 |
| | | 05 | 1 | 00 - 62 | EMBOUCHURE CONTROL NO. | off - 95, AT, VELOCITY, PB | 00 |
| | | 06 | 1 | 00 - 7F | DEPTH | -64...+63 | 40 |
| | | 07 | 1 | 00 - 62 | TONGUING CONTROL NO. | off - 95, AT, VELOCITY, PB | 00 |
| | | 08 | 1 | 00 - 7F | DEPTH | -64...+63 | 40 |
| | | 09 | 1 | 00 - 62 | SCREAM CONTROL NO. | off - 95, AT, VELOCITY, PB | 00 |
| | | 0A | 1 | 00 - 7F | DEPTH | -64...+63 | 40 |
| | | 0B | 1 | 00 - 62 | BREATH NOISE CONTROL NO. | off - 95, AT, VELOCITY, PB | 00 |
| | | 0C | 1 | 00 - 7F | DEPTH | -64...+63 | 40 |
| | | 0D | 1 | 00 - 62 | GROWL CONTROL NO. | off - 95, AT, VELOCITY, PB | 00 |
| | | 0E | 1 | 00 - 7F | DEPTH | -64...+63 | 40 |
| | | 0F | 1 | 00 - 62 | THROAT FORMANT CONTROL NO. | off - 95, AT, VELOCITY, PB | 00 |
| | | 10 | 1 | 00 - 7F | DEPTH | -64...+63 | 40 |
| | | 11 | 1 | 00 - 62 | HARMONIC ENHANCER CONTROL NO. | off - 95, AT, VELOCITY, PB | 00 |
| | | 12 | 1 | 00 - 7F | DEPTH | -64...+63 | 40 |
| | | 13 | 1 | 00 - 62 | DAMPING CONTROL NO. | off - 95, AT, VELOCITY, PB | 00 |
| | | 14 | 1 | 00 - 7F | DEPTH | -64...+63 | 40 |
| | | 15 | 1 | 00 - 62 | ABSORPTION CONTROL NO. | off - 95, AT, VELOCITY, PB | 00 |
| | | 16 | 1 | 00 - 7F | DEPTH | -64...+63 | 40 |
| TOTAL SIZE | | | | | | | |

p = Part Number (0 - F)
The above block affects only VL.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0A | nn | 10 | 1 | 00, 08, 28, 29 | OUTPUT SELECT | 0:stereo out, 8:indiv1+2<br>40:indiv1,41:indiv2 | 0 |
| TOTAL SIZE | | | 1 | | | | |

If data other than the above is received, 0:stereo out will be selected.
Note: In the case of OUTPUT SELECT, if the received value exceeds the number that can be supported, the parameter value will be 0.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0A | nn | 20 | 1 | 00 - 7F | HIGH PASS FILTER CUTOFF FREQUENCY | -64...0...+63 | 40 |
| | nn | 21 | 1 | | NOT USED | | -- |
| TOTAL SIZE | | | 2 | | | | |

nn = PART NUMBER

In the case of a DRUM PART, the following parameters will have no effect.

- BANK SELECT LSB
- MONO/POLY MODE
- SCALE TUNING
- PORTAMENTO
- PITCH EG
- FILTER MODURATION DEPTH (FMOD DEPTH)
- AMPLITUDE MODURATION DEPTH (AMOD DEPTH)
- OUTPUT SELECT

## < Table 1 - 10 >

MIDI Parameter Change table (A/D PART)

| Address (H) | | | Size (H) | Data (H) | Parameter | Description | Default value (H) |
|---|---|---|---|---|---|---|---|
| 10 | 0n | 00 | 1 | 00 - 01 | INPUT GAIN | MIC , LINE | 00 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | 01 | 1 | 00 - 7F | BANK SELECT MSB | 0...127 | 00 |
| | 02 | 1 | 00 - 7F | BANK SELECT LSB | 0...127 | 00 |
| | 03 | 1 | 00 - 7F | PROGRAM NUMBER | 1...128 | 00 |
| | 04 | 1 | 00-1F, 7F | Rcv CHANNEL | A1...A16, B1...B16, OFF | 7F |
| | 05 | 1 | | NOT USED | | -- |
| | 06 | 1 | | NOT USED | | -- |
| | 07 | 1 | | NOT USED | | -- |
| | 08 | 1 | | NOT USED | | -- |
| | 09 | 1 | | NOT USED | | -- |
| | 0A | 1 | | NOT USED | | -- |
| | 0B | 1 | 00 - 7F | VOLUME | 0...127 | 00 |
| | 0C | 1 | | NOT USED | | -- |
| | 0D | 1 | | NOT USED | | -- |
| | 0E | 1 | 01 - 7F | PAN | L63...C...R63 | 40 |
| | 0F | 1 | | NOT USED | | -- |
| | 10 | 1 | | NOT USED | | -- |
| | 11 | 1 | 00 - 7F | DRY LEVEL | 0...127 | 7F |
| | 12 | 1 | 00 - 7F | CHORUS SEND | 0...127 | 00 |
| | 13 | 1 | 00 - 7F | REVERB SEND | 0...127 | 00 |
| | 14 | 1 | 00 - 7F | VARIATION SEND | 0...127 | 00 |
| TOTAL SIZE | | 15 | | | | |
| | | | | | | |
| 10 | 0n | 30 | 1 | | NOT USED | -- |
| | | 31 | 1 | | NOT USED | -- |
| | | 32 | 1 | 00 - 01 | Rcv PROGRAM CHANGE | OFF , ON | 00 |
| | | 33 | 1 | 00 - 01 | Rcv CONTROL CHANGE | OFF , ON | 01 |
| | | 34 | 1 | | NOT USED | -- |
| | | 35 | 1 | 00 - 01 | MUTE | OFF , ON | 01 |
| | | 36 | 1 | | NOT USED | -- |
| | | 37 | 1 | | NOT USED | -- |
| | | 38 | 1 | | NOT USED | -- |
| | | 39 | 1 | 00 - 01 | Rcv VOLUME | OFF , ON | 01 |
| | | 3A | 1 | 00 - 01 | Rcv PAN | OFF , ON | 01 |
| | | 3B | 1 | 00 - 01 | Rcv EXPRESSION | OFF , ON | 01 |
| | | 3C | 1 | | NOT USED | -- |
| | | 3D | 1 | | NOT USED | -- |
| | | 3E | 1 | | NOT USED | -- |
| | | 3F | 1 | | NOT USED | -- |
| | | 40 | 1 | 00 - 01 | Rcv BANK SELECT | OFF , ON | 00 |
| | | 41 | 1 | | NOT USED | -- |
| | | 42 | 1 | | NOT USED | -- |
| | | 43 | 1 | | NOT USED | -- |
| | | 44 | 1 | | NOT USED | -- |
| | | 45 | 1 | | NOT USED | -- |
| | | 46 | 1 | | NOT USED | -- |
| | | 47 | 1 | | NOT USED | -- |
| | | 48 | 1 | | NOT USED | -- |
| | | 49 | 1 | | NOT USED | -- |
| | | 4A | 1 | | NOT USED | -- |
| | | 4B | 1 | | NOT USED | -- |
| | | 4C | 1 | | NOT USED | -- |
| | | 4D | 1 | | NOT USED | -- |
| | | 4E | 1 | | NOT USED | -- |
| | | 4F | 1 | | NOT USED | -- |
| | | 50 | 1 | | NOT USED | -- |
| | | 51 | 1 | | NOT USED | -- |
| | | 52 | 1 | | NOT USED | -- |
| | | 53 | 1 | | NOT USED | -- |
| | | 54 | 1 | | NOT USED | -- |
| | | 55 | 1 | | NOT USED | -- |
| | | 56 | 1 | | NOT USED | -- |
| | | 57 | 1 | | NOT USED | -- |
| | | 58 | 1 | | NOT USED | -- |

| | | | | | | |
|---|---|---|---|---|---|---|
| | 59 | 1 | 00 - 5F | AC1 CONTROLLER NUMBER | 0...95 | 10 |
| | 5A | 1 | | NOT USED | | -- |
| | 5B | 1 | | NOT USED | | -- |
| | 5C | 1 | | NOT USED | | -- |
| | 5D | 1 | | NOT USED | | -- |
| | 5E | 1 | | NOT USED | | -- |
| | 5F | 1 | | NOT USED | | -- |
| | 60 | 1 | 00 - 5F | AC2 CONTROLLER NUMBER | 0...95 | 11 |
| TOTAL SIZE | | 31 | | | | |

n: A/D Part number (0 - 1)

## < Table 1 - 11 >

MIDI Parameter Change table (A/D System)

| Address (H) | | | Size (H) | Data (H) | Parameter | Description | Default value (H) |
|---|---|---|---|---|---|---|---|
| 11 | 00 | 00 | 1 | 00 - 01 | A/D1, 2 MONO/STEREO MODE | MONO/STEREO | 00 |
| TOTAL SIZE | | | 1 | | | | |

## < Table 1 - 12 >

MIDI Parameter Change table (DRUM SETUP)

| Address (H) | | | Size (H) | Data (H) | Parameter | Description | Default value (H) |
|---|---|---|---|---|---|---|---|
| 3n | rr | 00 | 1 | 00 - 7F | PITCH COARSE | -64...0...+63 | 40 |
| | | 01 | 1 | 00 - 7F | PITCH FINE | -64...0...+63 [cent] | 40 |
| | | 02 | 1 | 00 - 7F | LEVEL | 0...127 | depend on the note |
| | | 03 | 1 | 00 - 7F | ALTERNATE GROUP | OFF, 1...127 | " |
| | | 04 | 1 | 00 - 7F | PAN | RND, L63...C...R63 | " |
| | | 05 | 1 | 00 - 7F | REVERB SEND | 0...127 | " |
| | | 06 | 1 | 00 - 7F | CHORUS SEND | 0...127 | " |
| | | 07 | 1 | 00 - 7F | VARIATION SEND | 0...127 | 7F |
| | | 08 | 1 | 00 - 01 | KEY ASSIGN | SINGLE, MULTI | 00 |
| | | 09 | 1 | 00 - 01 | Rcv NOTE OFF | OFF, ON | depend on the note |
| | | 0A | 1 | 00 - 01 | Rcv NOTE ON | OFF, ON | 01 |
| | | 0B | 1 | 00 - 7F | LOW PASS FILTER CUTOFF FREQUENCY | -64...0...63 | 40 |
| | | 0C | 1 | 00 - 7F | LOW PASS FILTER RESONANCE | -64...0...63 | 40 |
| | | 0D | 1 | 00 - 7F | EG ATTACK RATE | -64...0...63 | 40 |
| | | 0E | 1 | 00 - 7F | EG DECAY1 RATE | -64...0...63 | 40 |
| | | 0F | 1 | 00 - 7F | EG DECAY2 RATE | -64...0...63 | 40 |
| TOTAL SIZE | | | 10 | | | | |
| 3n | rr | 20 | 1 | 00 - 7F | EQ BASS GAIN | -12 - +12 [dB] | 40 |
| | | 21 | 1 | 00 - 7F | EQ TREBLE GAIN | -12 - +12 [dB] | 40 |
| | | 22 | 1 | | NOT USED | | -- |
| | | 23 | 1 | | NOT USED | | -- |
| | | 24 | 1 | 04 - 28 | EQ BASS FREQUENCY | 32...2.0k [Hz] | 0C |
| | | 25 | 1 | 1C - 3A | EQ TREBLE FREQUENCY | 500...16.0k [Hz] | 36 |
| | | 26 | 1 | | NOT USED | | -- |
| | | 27 | 1 | | NOT USED | | -- |
| | | 28 | 1 | | NOT USED | | -- |
| | | 29 | 1 | | NOT USED | | -- |
| | | 2A | 1 | | NOT USED | | -- |
| | | 2B | 1 | | NOT USED | | -- |
| | | 2C | 1 | | NOT USED | | -- |
| | | 2D | 1 | | NOT USED | | -- |
| TOTAL SIZE | | | 0E | | | | |
| 3n | rr | 40 | 1 | 00, 08, 28, 29 | OUTPUT SELECT | 0:stereo out, 8:indiv1+2<br>40:indiv1, 41:indiv2 | 0 |
| TOTAL SIZE | | | 1 | | | | |

When data other than the above is received, 0:stereo out will be selected.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 3n | rr | 50 | 1 | 00 - 7F | HIGH PASS FILTER CUTOFF FREQUENCY | -64...0...63 | 40 |
| | | 51 | 1 | | NOT USED | | -- |
| TOTAL SIZE | | | 2 | | | | |
| 3n | rr | 60 | 1 | 30 - 50 | VELOCITY SENSE PITCH | -16...0...16 | depend on the note |
| | | 61 | 1 | 30 - 50 | VELOCITY SENSE LPF CUTOFF | -16...0...16 | " |
| TOTAL SIZE | | | 2 | | | | |

n:Drum Setup Number (0 - 3)
rr:note number (0D - 5B)

In the following cases, the MU100R will initialize all Drum Setups.
XG SYSTEM ON received
GM SYSTEM ON received
DRUM SETUP RESET received (when in XG mode)

[Note]
When a part to which a Drum Setup is assigned receives a program change, the assigned Drum Setup will be initialized.

If the same Drum Setup is assigned to two or more parts, changes in Drum Setup parameters (including program changes) will apply to all parts to which it is assigned.

## < Table 1 - 13 >

MIDI Parameter Change table (PART ASSIGN)

| Address (H) | | | Size (H) | Data (H) | Parameter | Description | Default value (H) |
|---|---|---|---|---|---|---|---|
| 70 | 00 | 00 | 1 | 00 - 0F, 7F | VL PART ASSIGN | PART 1...16, OFF | 0 |
| TOTAL SIZE | | | 1 | | | | |

## < Table 2 - 1 >

Parmeter Bass Address
Model ID = 49

| Parameter | Address (H) | Address (M) | Address (L) | Description |
|---|---|---|---|---|
| MU100 SYSTEM | 00 | 00 | 00 | System |
| REMOTE SWITCH | 0A | 00 | 00 | Remote Switch |
| MU80 INTERNAL PERFORMANCE | 30 | 00 | 00 | #1 Common |
| | | : | | : |
| | 30 | 63 | 00 | #100 Common |
| | 31 | 00 | 00 | #1 Part1 |
| | | : | | : |
| | 31 | 63 | 00 | #100 Part1 |
| | 32 | 00 | 00 | #1 Part2 |
| | | : | | : |
| | 32 | 63 | 00 | #100 Part2 |
| | 33 | 00 | 00 | #1 Part3 |
| | | : | | : |
| | 33 | 63 | 00 | #100 Part3 |
| | 34 | 00 | 00 | #1 Part4 |
| | | : | | : |
| | 34 | 63 | 00 | #100 Part4 |

MU80 Performance Common INT

| Address (H) | | | Parameter |
|---|---|---|---|
| 30 | pp | 00 | System |
| | pp | 20 | Effect |
| | pp | 70 | EQ |

pp:Performance#

## < Table 2 - 2 >

MIDI Parameter Change table (MU100 SYSTEM)

| Address (H) | | | Size (H) | Data (H) | Parameter | Description | Default value (H) |
|---|---|---|---|---|---|---|---|
| 00 | 00 | 00 | 1 | 00 - 01 | MUTE LOCK | OFF , ON | 00 |
| | | 01 | 1 | 00 - 01 | AD LOCK | OFF , ON | 00 |
| | | 02 | 1 | 00 - 01 | EQ LOCK | OFF , ON | 00 |
| | | 03 | 1 | 00 - 01 | Rcv GM EXCLUSIVE MESSAGE | OFF , ON | 01 |
| | | 04 | 1 | 00 - 01 | Rcv BANK SELECT | OFF , ON | 01 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | 05 | 1 | 00 - 04 | BULK OUT INTERVAL TIME | 50, 100, 150, 200, 300 | 02 |
| | | 06 | 1 | 00 - 0F | PERFORMANCE SYSTEM CHANNEL | 1...16 | 00 |
| | | 07 | 1 | 28 - 58 | PERFORMANCE SYSTEM TRANSPOSE | -24...0...+24 [semitone] | 40 |
| | | 08 | 1 | 00 - 07 | LCD CONTRAST | 1...8 | 01 |
| | | 09 | 1 | 00 - 07 | MULTI PORT NUMBER for MIDI OUT | 1...8 | 00 |
| TOTAL SIZE | | 0A | | | | | |
| 00 | 00 | 10 | 1 | 00 - 01 | DRUM EDIT Rcv NOTE | OFF, ON | 01 |
| TOTAL SIZE | | 1 | | | | | |
| 00 | 00 | 11 | 1 | 00 - 01 | OUTPUT SELECT LOCK | OFF, ON | 00 |
| TOTAL SIZE | | 1 | | | | | |
| OUTPUT SELECT LOCK is only for the MU100R. | | | | | | | |
| 00 | 00 | 12 | 1 | 00 - 01 | VOICE MAP | MU basic, MU100 Native | 01 |
| TOTAL SIZE | | 1 | | | | | |

### < Table 2 - 3 >

MIDI Parameter Change table(REMOTE SWITCH)

| Address (H) | | | Size (H) | Data (H) | Parameter | Description | Default value (H) |
|---|---|---|---|---|---|---|---|
| 0A | 00 | 00 | 1 | 00-01 | PLAY SWITCH | OFF, ON | -- |
| | | 01 | 1 | 00-01 | UTIL SWITCH | OFF, ON | -- |
| | | 02 | 1 | 00-01 | MODE SWITCH | OFF, ON | -- |
| | | 03 | 1 | 00-01 | EDIT SWITCH | OFF, ON | -- |
| | | 04 | 1 | 00-01 | EFFECT SWITCH | OFF, ON | -- |
| | | 05 | 1 | 00-01 | EQ SWITCH | OFF, ON | -- |
| | | 06 | 1 | 00-01 | MUTE/SOLO SWITCH | OFF, ON | -- |
| | | 07 | 1 | 00-01 | ENTER SWITCH | OFF, ON | -- |
| | | 08 | 1 | 00-01 | EXIT SWITCH | OFF, ON | -- |
| | | 09 | 1 | 00-01 | PART- SWITCH | OFF, ON | -- |
| | | 0A | 1 | 00-01 | SELECT- SWITCH | OFF, ON | -- |
| | | 0B | 1 | 00-01 | VALUE- SWITCH | OFF, ON | -- |
| | | 0C | 1 | 00-01 | PART+ SWITCH | OFF, ON | -- |
| | | 0D | 1 | 00-01 | SELECT+ SWITCH | OFF, ON | -- |
| | | 0E | 1 | 00-01 | VALUE+ SWITCH | OFF, ON | -- |
| TOTAL SIZE | | 0F | | | | | |

### < Table 2 - 4 >

MIDI Parameter Change table (MU80, MU50 INTERNAL PERFORMANCE)

| Address (H) | | | Size (H) | Data (H) | Parameter | Description | Default value (H) |
|---|---|---|---|---|---|---|---|
| 30 | pp | 00 | 0C | 20 - 7F | PERFORMANCE NAME | 32...127 (ASCII CHARACTER) | depends on performance number |
| | pp | 0C | 01 | 00 - 7F | PERFORMANCE VOLUME | 0...127 | " |
| | pp | 0D | 01 | 01 - 7F | PERFORMANCE PAN | L63...C...R63 (1...64...127) | " |
| | pp | 0E | 01 | 00 - 60 | AC1 CC NUMBER | 0...95, CAT (96) | " |
| | pp | 0F | 01 | 00 - 01 | A/D INPUT | OFF, ON | " |
| TOTAL SIZE | | | 10 | | | | |
| 30 | pp | 20 | 2 | 00-7F | REVERB TYPE MSB | refer to Effect Program List | depends on performance number |
| | pp | 21 | | 00-7F | REVERB TYPE LSB | " | " |
| | pp | 22 | 1 | 00-7F | REVERB PARAMETER 1 | " | " |
| | pp | 23 | 1 | 00-7F | REVERB PARAMETER 2 | " | " |
| | pp | 24 | 1 | 00-7F | REVERB PARAMETER 3 | " | " |
| | pp | 25 | 1 | 00-7F | REVERB PARAMETER 4 | " | " |
| | pp | 26 | 1 | 00-7F | REVERB PARAMETER 5 | " | " |
| | pp | 27 | 1 | 00-7F | REVERB RETURN | -∞ΩdB...0dB...+6dB (0...96...127) | " |
| | pp | 28 | 1 | 01-7F | REVERB PAN | L63...C...R63 | " |
| | pp | 29 | 2 | 00-7F | CHORUS TYPE MSB | refer to Effect Program List | " |
| | pp | 2A | | 00-7F | CHORUS TYPE LSB | " | " |
| | pp | 2B | 1 | 00-7F | CHORUS PARMETER 1 | " | " |
| | pp | 2C | 1 | 00-7F | CHORUS PARMETER 2 | " | " |

| | | | | | | |
|---|---|---|---|---|---|---|
| pp | 2D | 1 | 00-7F | CHORUS PARMETER 3 | " | " |
| pp | 2E | 1 | 00-7F | CHORUS PARMETER 4 | " | " |
| pp | 2F | 1 | 00-7F | CHORUS PARMETER 5 | " | " |
| pp | 30 | 1 | 00-7F | CHORUS RETURN | -∞ΩdB...0dB...+6dB (0...96...127) | " |
| pp | 31 | 1 | 01-7F | CHORUS PAN | L63...C...R63 | " |
| pp | 32 | 1 | 00-7F | SEND CHORUS TO REVERB | -∞ΩdB...0dB...+6dB (0...96...127) | " |
| pp | 33 | 2 | 00-7F | VARIATION TYPE MSB | refer to Effect Program List | " |
| pp | 34 | | 00-7F | VARIATION TYPE LSB | " | " |
| pp | 35 | 2 | 00-7F | VARIATION PARMETER 1 MSB | " | " |
| pp | 36 | | 00-7F | VARIATION PARMETER 1 LSB | " | " |
| pp | 37 | 2 | 00-7F | VARIATION PARMETER 2 MSB | " | " |
| pp | 38 | | 00-7F | VARIATION PARMETER 2 LSB | " | " |
| pp | 39 | 2 | 00-7F | VARIATION PARMETER 3 MSB | " | " |
| pp | 3A | | 00-7F | VARIATION PARMETER 3 LSB | " | " |
| pp | 3B | 2 | 00-7F | VARIATION PARMETER 4 MSB | " | " |
| pp | 3C | | 00-7F | VARIATION PARMETER 4 LSB | " | " |
| pp | 3D | 2 | 00-7F | VARIATION PARMETER 5 MSB | " | " |
| pp | 3E | | 00-7F | VARIATION PARMETER 5 LSB | " | " |
| pp | 3F | 2 | 00-7F | VARIATION PARMETER 10 MSB | " | " |
| pp | 40 | | 00-7F | VARIATION PARMETER 10 LSB | " | " |
| pp | 41 | 1 | 00-7F | VARIATION RETURN | -∞ΩdB...0dB...+6dB (0...96...127) | " |
| pp | 42 | 1 | 01-7F | VARIATION PAN | L63...C...R63 (1...64...127) | " |
| pp | 43 | 1 | 00-7F | SEND VARIATION TO REVERB | -∞ΩdB...0dB...+6dB (0...96...127) | " |
| pp | 44 | 1 | 00-7F | SEND VARIATION TO CHORUS | -∞ΩdB...0dB...+6dB (0...96...127) | " |
| pp | 45 | 1 | 00-7F | AC1 VARIATION CONTROL DEPTH | 0...127 | " |
| pp | 46 | 1 | 00-01 | VARIATION CONNECTION | INSERTION , SYSTEM | " |
| pp | 47 | 1 | 00-7F | VARATION PART | Part1...4 (0...3)<br>AD1, AD2 (64, 65)<br>OFF (127) | " |
| pp | 48 | 2 | 00-7F | INSERTION EFFECT 1 TYPE MSB | refer to Effect Program List | " |
| pp | 49 | | 00-7F | INSERTION EFFECT 1 TYPE LSB | " | " |
| pp | 4A | 1 | 00-7F | INSERTION EFFECT 1 PARAMETER1 | " | " |
| pp | 4B | 1 | 00-7F | INSERTION EFFECT 1 PARAMETER2 | " | " |
| pp | 4C | 1 | 00-7F | INSERTION EFFECT 1 PARAMETER3 | " | " |
| pp | 4D | 1 | 00-7F | INSERTION EFFECT 1 PARAMETER4 | " | " |
| pp | 4E | 1 | 00-7F | INSERTION EFFECT 1 PARAMETER5 | " | " |
| pp | 4F | 1 | 00-7F | INSERTION EFFECT 1 PARAMETER10 | " | " |
| pp | 50 | 1 | 00-7F | INSERTION EFFECT 1 PART | Part1...4 (0...3)<br>AD1, AD2 (64, 65)<br>OFF (127) | " |

TOTAL SIZE 31

MIDI Parameter Change table (INTERNAL PERFORMANCE COMMON EQ)

| Address | | | Size | Data | Parameter | Description | Default value |
|---|---|---|---|---|---|---|---|
| (H) | | | (H) | (H) | | | (H) |
| 30 | pp | 70 | 1 | 00 - 04 | EQ TYPE | flat, jazz, pops, rock, concert | depends on performance number |
| | pp | 71 | 1 | 34 - 4C | EQ GAIN1 | -12...0...+12 [dB] | " |
| | pp | 72 | 1 | 34 - 4C | EQ GAIN2 | -12...0...+12 [dB] | " |
| | pp | 73 | 1 | 34 - 4C | EQ GAIN3 | -12...0...+12 [dB] | " |
| | pp | 74 | 1 | 34 - 4C | EQ GAIN4 | -12...0...+12 [dB] | " |
| | pp | 75 | 1 | 34 - 4C | EQ GAIN5 | -12...0...+12 [dB] | " |

TOTAL SIZE 06

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 3n | pp | 00 | 1 | 00 - 7F | PROGRAM NUMBER | 1...128 | depends on performance number |
| 3n | pp | 01 | 1 | 00 - 7F | BANK SELECT | 0...127 (refer to XG voice map) | " |
| 3n | pp | 02 | 1 | 00 - 7F | VOLUME | 0...127 | " |
| 3n | pp | 03 | 1 | 00, 01 - 7F | PAN | RND, L63...C...R63 | " |
| 3n | pp | 04 | 1 | 00 - 7F | DRY SEND LEVEL | 0...127 | " |
| 3n | pp | 05 | 1 | 00 - 7F | CHORUS SEND | 0...127 | " |
| 3n | pp | 06 | 1 | 00 - 7F | REVERB SEND | 0...127 | " |
| 3n | pp | 07 | 1 | 00 - 7F | VARIATION SEND | 0...127 | " |
| 3n | pp | 08 | 1 | 28 - 58 | NOTE SHIFT | -24...0...+24 [semitones] | " |
| 3n | pp | 09 | 1 | 00 - 7F | LOW PASS FILTER CUTOFF FREQUENCY | -64...0...+63 | " |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 3n | pp | 0A | 1 | 00 - 7F | LOW PASS FILTER RESONANCE | | -64...0...+63 | " |
| 3n | pp | 0B | 1 | 00 - 7F | EG ATTACK TIME | | -64...0...+63 | " |
| 3n | pp | 0C | 1 | 00 - 7F | EG DECAY TIME | | -64...0...+63 | " |
| 3n | pp | 0D | 1 | 00 - 7F | EG RELEASE TIME | | -64...0...+63 | " |
| 3n | pp | 0E | 1 | 00 - 7F | VIBRATO RATE | | -64...0...+63 | " |
| 3n | pp | 0F | 1 | 00 - 7F | VIBRATO DEPTH | | -64...0...+63 | " |
| 3n | pp | 10 | 1 | 00 - 7F | VIBRATO DELAY | | -64...0...+63 | " |
| 3n | pp | 11 | 2 | 00 - 0F | DETUNE | | -12.8...0...+12.7 [Hz] | " |
| 3n | pp | 11 | | 00 - 0F | | | 1st bit3-0→bit7-4 | |
| | | | | | | | 2nd bit3-0→bit3-0 | |
| | | | | | Rcv NOTE MESSAGE | | 1st bit6: OFF, ON (0,1) | |
| | | | | | MONO/POLY MODE | | 1st bit5: MONO, POLY (0,1) | |
| | | | | | PORTAMENTO SWITCH | * | 1st bit4: OFF, ON (0,1) | |
| 3n | pp | 13 | 1 | 00 - 7F | PITCH EG INITIAL LEVEL | | 0...127 | " |
| 3n | pp | 14 | 1 | 00 - 7F | PITCH EG ATTACK TIME | | 0...127 | " |
| 3n | pp | 15 | 1 | 00 - 7F | PITCH EG RELEASE LEVEL | | 0...127 | " |
| 3n | pp | 16 | 1 | 00 - 7F | PITCH EG RELEASE TIME | | 0...127 | " |
| 3n | pp | 17 | 1 | 00 - 7F | MW LFO PMOD DEPTH | * | 0...127 | " |
| 3n | pp | 18 | 1 | 00 - 7F | MW LFO FMOD DEPTH | * | 0...127 | " |
| 3n | pp | 19 | 1 | 28 - 58 | PITCH BEND CONTROL | * | -24...0...+24 [semitones] | " |
| 3n | pp | 1A | 1 | 00 - 7F | AC1 LOW PASS FILTER CONTROL | * | -64...0...63 | " |
| 3n | pp | 1B | 1 | 00 - 7F | AC1 AMPLITUDE CONTROL | * | -100...0...+100 [%] | " |
| 3n | pp | 1C | 1 | 00 - 7F | VELOCITY SENSE DEPTH | | 0...127 | " |
| 3n | pp | 1D | 1 | 00 - 7F | VELOCITY SENSE OFFSET | | 0...127 | " |
| 3n | pp | 1E | 1 | 00 - 7F | NOTE LIMIT LOW | | C-2...G8 | " |
| 3n | pp | 1F | 1 | 00 - 7F | NOTE LIMIT HIGH | | C-2...G8 | " |
| 3n | pp | 20 | 1 | 00 - 7F | PORTAMENTO TIME | * | 0...127 | " |
| 3n | pp | 21 | 1 | 01 - 7F | VELOCITY LIMIT LOW | | 1...127 | " |
| 3n | pp | 22 | 1 | 01 - 7F | VELOCITY LIMIT HIGH | | 1...127 | " |
| TOTAL SIZE | | | 23 | | | | | |

n: performance part number (01-04)
pp: performance number (00-63)
Parameters marked by * will receive only the n=1 data as Common data, and will not receive the n = 2~4 data.

**< Table 3 - 1 >**

Parameter Base Address
Model ID = 59

| Parameter | Adress (H) | Adress (M) | Adress (L) | Description |
|---|---|---|---|---|
| CURRENT PERFORMANCE | 09 | 00 | 00 | Part1 |
| | 09 | 01 | 00 | Part2 |
| | 09 | 02 | 00 | Part3 |
| | 09 | 03 | 00 | Part4 |
| | 0B | 00 | 00 | Common |
| | 0C | 00 | 00 | Insertion1 Effect |
| | 0C | 01 | 00 | Insertion2 Effect |
| INTERNAL PERFORMANCE | 30 | 00 | 00 | #1 Part1 |
| | | : | | : |
| | 30 | 63 | 00 | #100 Part1 |
| | 31 | 00 | 00 | #1 Part2 |
| | | : | | : |
| | 31 | 63 | 00 | #100 Part2 |
| | 32 | 00 | 00 | #1 Part3 |
| | | : | | : |
| | 32 | 63 | 00 | #100 Part3 |
| | 33 | 00 | 00 | #1 Part4 |
| | | : | | : |
| | 33 | 63 | 00 | #100 Part4 |

Performance Common INT

| Address (H) | | | Parameter |
|---|---|---|---|
| 40 | pp | 00 | System |
| pp | 20 | | Effect |
| pp | 70 | | EQ |

pp:Performance#

| | | | | |
|---|---|---|---|---|
| INTERNAL PERFORMANCE (Continued) | 40 | 00 | 00 | #1 Common |
| | | : | | : |
| | 40 | 63 | 00 | #100 Common |
| | 50 | 00 | 00 | #1 Insertion1 Effect |
| | | : | | : |
| | 50 | 63 | 00 | #100 Insertion1 Effect |
| | 51 | 00 | 00 | #1 Insertion2 Effect |
| | | : | | : |
| | 51 | 63 | 00 | #100 Insertion2 Effect |
| | 60 | 00 | 00 | #1 Plugin Board1 |
| | | : | | : |
| | 60 | 63 | 00 | #100 Plugin Board1 |
| | 61 | 00 | 00 | #1 Plugin Board2 |
| | | : | | : |
| | 61 | 63 | 00 | #100 Plugin Board2 |

Performance Common CUR

| Address (H) | | | Parameter |
|---|---|---|---|
| | 0B | 00 | 00 System |
| | 00 | 20 | Effect |
| | 00 | 70 | EQ |

**< Table 3 - 2 >**

MIDI Parameter Change table (CURRENT PERFORMANCE)

| Address (H) | | | Size (H) | Data (H) | Parameter | Description | Default value (H) |
|---|---|---|---|---|---|---|---|
| 09 | 0n | 00 | 1 | 00 - 7F | PROGRAM NUMBER | 1...128 | depends on performance number |
| | 0n | 01 | 1 | | NOT USED | | -- |
| | 0n | 02 | 1 | 00 - 7F | VOLUME | 0...127 | depends on performance number |
| | 0n | 03 | 1 | 00 - 7F | PAN | RND,L63...C...R63 (0, 1...64...127) | " |
| | 0n | 04 | 1 | 00 - 7F | DRY SEND LEVEL | 0...127 | " |
| | 0n | 05 | 1 | 00 - 7F | CHORUS SEND | 0...127 | " |
| | 0n | 06 | 1 | 00 - 7F | REVERB SEND | 0...127 | " |
| | 0n | 07 | 1 | 00 - 7F | VARIATION SEND | 0...127 | " |
| | 0n | 08 | 1 | 28 - 58 | NOTE SHIFT | -24...0...+24 [semitones] | " |
| | 0n | 09 | 1 | 00 - 01 | Rcv NOTE MESSAGE (MUTE) | OFF , ON (0, 1) | " |
| | 0n | 0A | 1 | 00 - 7F | LOW PASS FILTER CUTOFF FREQUENCY | -64...0...+63 | " |
| | 0n | 0B | 1 | 00 - 7F | LOW PASS FILTER RESONANCE | -64...0...+63 | " |
| | 0n | 0C | 1 | 00 - 7F | EG ATTACK TIME | -64...0...+63 | " |
| | 0n | 0D | 1 | 00 - 7F | EG DECAY TIME | -64...0...+63 | " |
| | 0n | 0E | 1 | 00 - 7F | EG RELEASE TIME | -64...0...+63 | " |
| | 0n | 0F | 1 | 00 - 7F | VIBRATO RATE | -64...0...+63 | " |
| | 0n | 10 | 1 | 00 - 7F | VIBRATO DEPTH | -64...0...+63 | " |
| | 0n | 11 | 1 | 00 - 7F | VIBRATO DELAY | -64...0...+63 | " |
| | 0n | 12 | 2 | 00 - 0F | DETUNE | -12.8...0...+12.7[Hz] | " |
| | 0n | 13 | | 00 - 0F | | 1st bit3-0→bit7-4<br>2nd bit3-0→bit3-0 | |
| | 0n | 14 | 1 | 00 - 7F | PITCH EG INITIAL LEVEL | -64...0...+63 | " |
| | 0n | 15 | 1 | 00 - 7F | PITCH EG ATTACK TIME | -64...0...+63 | " |
| | 0n | 16 | 1 | 00 - 7F | PITCH EG RELEASE LEVEL | -64...0...+63 | " |
| | 0n | 17 | 1 | 00 - 7F | PITCH EG RELEASE TIME | -64...0...+63 | " |
| | 0n | 18 | 1 | 00 - 01 | MONO/POLY MODE | MONO , POLY (0, 1) | " |
| | 0n | 19 | 1 | 00 - 7F | VELOCITY SENSE DEPTH | 0...127 | " |
| | 0n | 1A | 1 | 00 - 7F | VELOCITY SENSE OFFSET | 0...127 | " |
| | 0n | 1B | 1 | 00 - 7F | NOTE LIMIT LOW | C-2...G8 (0...127) | " |
| | 0n | 1C | 1 | 00 - 7F | NOTE LIMIT HIGH | C-2...G8 (0...127) | " |
| | 0n | 1D | 1 | 01 - 7F | VELOCITY LIMIT LOW | 1...127 | " |
| | 0n | 1E | 1 | 01 - 7F | VELOCITY LIMIT HIGH | 1...127 | " |
| | 0n | 1F | 1 | 00 - 7F | EQ BASS | -64 ...0...+63 (-12 - +12 [dB]) | " |
| | 0n | 20 | 1 | 00 - 7F | EQ TREBLE | -64 ...0...+63 (-12 - +12 [dB]) | " |
| | 0n | 21 | 1 | 04 - 28 | EQ BASS frequency | 32...2.0k [Hz] | " |
| | 0n | 22 | 1 | 1C - 3A | EQ TREBLE frequency | 500...16.0k [Hz] | " |
| | 0n | 23 | 1 | 00 - 7F | HIGH PASS FILTER CUTOFF FREQUENCY | -64...0...+63 | " |
| | 0n | 24 | 2 | 00 - 7F | BANK SELECT MSB | 0...127 | " |
| | 0n | 25 | | 00 - 7F | BANK SELECT LSB | 0...127 | " |
| TOTAL SIZE | | | 26 | | | | |

n: performance part number (00-03)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0B | 00 | 00 | 0C | 20 - 7F | PERFORMANCE NAME | 32...127 (ASCII CHARACTER) | depends on performance number |
| | | 0C | 01 | 00 - 7F | PERFORMANCE VOLUME | 0...127 | " |
| | | 0D | 01 | 01 - 7F | PERFORMANCE PAN | L63...C...R63 | " |
| | | 0E | 01 | 00 - 60 | AC1 CC NUMBER | 0...95, CAT | " |
| | | 0F | 01 | 00 - 01 | A/D INPUT | OFF, ON | " |
| | | 10 | 01 | 00 - 7F | MW LFO PMOD DEPTH | 0...127 | " |
| | | 11 | 01 | 00 - 7F | MW LFO FMOD DEPTH | 0...127 | " |
| | | 12 | 01 | 28 - 58 | BEND PITCH CONTROL | -24..0..+24 [semitones] | " |
| | | 13 | 01 | 00 - 7F | AC1 LOW PASS FILTER CONTROL | -64 ...0...+63 | " |
| | | 14 | 01 | 00 - 7F | AC1 AMPLITUDE CONTROL | -64 ...0...+63 | " |
| | | 15 | 01 | 00 - 7F | AC1 LFO FMOD DEPTH | 0...127 | " |
| | | 16 | 01 | 00 - 01 | PORTAMENTO SWITCH | OFF, ON (0, 1) | " |
| | | 17 | 01 | 00 - 7F | PORTAMENTO TIME | 0...127 | " |
| TOTAL SIZE | | | 18 | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0B | 00 | 20 | 2 | 00-7F | REVERB TYPE MSB | refer to Effect Program List | depends on performance number |
| | | 21 | | 00-7F | REVERB TYPE LSB | " | " |
| | | 22 | 1 | 00-7F | REVERB PARAMETER 1 | " | " |
| | | 23 | 1 | 00-7F | REVERB PARAMETER 2 | " | " |
| | | 24 | 1 | 00-7F | REVERB PARAMETER 3 | " | " |
| | | 25 | 1 | 00-7F | REVERB PARAMETER 4 | " | " |
| | | 26 | 1 | 00-7F | REVERB PARAMETER 5 | " | " |
| | | 27 | 1 | 00-7F | REVERB RETURN | -∞dB...0dB...+6dB (0...96...127) | " |
| | | 28 | 1 | 01-7F | REVERB PAN | L63...C...R63 | " |
| | | 29 | 2 | 00-7F | CHORUS TYPE MSB | refer to Effect Program List | " |
| | | 2A | | 00-7F | CHORUS TYPE LSB | " | " |
| | | 2B | 1 | 00-7F | CHORUS PARAMETER 1 | " | " |
| | | 2C | 1 | 00-7F | CHORUS PARAMETER 2 | " | " |
| | | 2D | 1 | 00-7F | CHORUS PARAMETER 3 | " | " |
| | | 2E | 1 | 00-7F | CHORUS PARAMETER 4 | " | " |
| | | 2F | 1 | 00-7F | CHORUS PARAMETER 5 | " | " |
| | | 30 | 1 | 00-7F | CHORUS RETURN | -∞dB...0dB...+6dB (0...96...127) | " |
| | | 31 | 1 | 01-7F | CHORUS PAN | L63...C...R63 (1...64...127) | " |
| | | 32 | 1 | 00-7F | SEND CHORUS TO REVERB | -∞dB...0dB...+6dB (0...96...127) | " |
| | | 33 | 2 | 00-7F | VARIATION TYPE MSB | refer to Effect Program List | " |
| | | 34 | | 00-7F | VARIATION TYPE LSB | " | " |
| | | 35 | 2 | 00-7F | VARIATION PARAMETER 1 MSB | " | " |
| | | 36 | | 00-7F | VARIATION PARAMETER 1 LSB | " | " |
| | | 37 | 2 | 00-7F | VARIATION PARAMETER 2 MSB | " | " |
| | | 38 | | 00-7F | VARIATION PARAMETER 2 LSB | " | " |
| | | 39 | 2 | 00-7F | VARIATION PARAMETER 3 MSB | " | " |
| | | 3A | | 00-7F | VARIATION PARAMETER 3 LSB | " | " |
| | | 3B | 2 | 00-7F | VARIATION PARAMETER 4 MSB | " | " |
| | | 3C | | 00-7F | VARIATION PARAMETER 4 LSB | " | " |
| | | 3D | 2 | 00-7F | VARIATION PARAMETER 5 MSB | " | " |
| | | 3E | | 00-7F | VARIATION PARAMETER 5 LSB | " | " |
| | | 3F | 2 | 00-7F | VARIATION PARAMETER 10 MSB | " | " |
| | | 40 | | 00-7F | VARIATION PARAMETER 10 LSB | " | " |
| | | 41 | 1 | 00-7F | VARIATION RETURN | -∞dB...0dB...+6dB (0...96...127) | " |
| | | 42 | 1 | 01-7F | VARIATION PAN | L63...C...R63 | " |
| | | 43 | 1 | 00-7F | SEND VARIATION TO REVERB | -∞dB...0dB...+6dB (0...96...127) | " |
| | | 44 | 1 | 00-7F | SEND VARIATION TO CHORUS | -∞dB...0dB...+6dB (0...96...127) | " |
| | | 45 | 1 | 00-7F | AC1 VARIATION CONTROL DEPTH | 0...127 | " |
| | | 46 | 1 | 00-01 | VARIATION CONNECTION | INSERTION , SYSTEM | " |
| | | 47 | 1 | 00-7F | VARIATION PART | Part1...4 (0...3)<br>AD1, AD2 (64, 65)<br>OFF (127) | " |
| TOTAL SIZE | | | | 28 | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0B | 00 | 70 | 1 | 00 - 04 | EQ TYPE | flat, jazz, pops, rock, concert | depends on performance number |
| | | 71 | 1 | 34 - 4C | EQ GAIN1 | -12...0...+12 [dB] | " |
| | | 72 | 1 | 34 - 4C | EQ GAIN2 | -12...0...+12 [dB] | " |
| | | 73 | 1 | 34 - 4C | EQ GAIN3 | -12...0...+12 [dB] | " |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | 74 | 1 | 34 - 4C | EQ GAIN4 | -12...0...+12 [dB] | " |
| | | 75 | 1 | 34 - 4C | EQ GAIN5 | -12...0...+12 [dB] | " |
| TOTAL SIZE | | 06 | | | | | |
| 0C | 00 | 00 | 2 | 00-7F | INSERTION EFFECT 1 TYPE MSB | refer to Effect Program List | depends on performance number |
| | | 01 | | 00-7F | INSERTION EFFECT 1 TYPE LSB | " | " |
| | | 02 | 2 | 00-7F | INSERTION EFFECT 1 PARAMETER1 MSB | " | " |
| | | 03 | | 00-7F | INSERTION EFFECT 1 PARAMETER1 LSB | " | " |
| | | 04 | 2 | 00-7F | INSERTION EFFECT 1 PARAMETER2 MSB | " | " |
| | | 05 | | 00-7F | INSERTION EFFECT 1 PARAMETER2 LSB | " | " |
| | | 06 | 2 | 00-7F | INSERTION EFFECT 1 PARAMETER3 MSB | " | " |
| | | 07 | | 00-7F | INSERTION EFFECT 1 PARAMETER3 LSB | " | " |
| | | 08 | 2 | 00-7F | INSERTION EFFECT 1 PARAMETER4 MSB | " | " |
| | | 09 | | 00-7F | INSERTION EFFECT 1 PARAMETER4 LSB | " | " |
| | | 0A | 2 | 00-7F | INSERTION EFFECT 1 PARAMETER5 MSB | " | " |
| | | 0B | | 00-7F | INSERTION EFFECT 1 PARAMETER5 LSB | " | " |
| | | 0C | 2 | 00-7F | INSERTION EFFECT 1 PARAMETER10 MSB | " | " |
| | | 0D | | 00-7F | INSERTION EFFECT 1 PARAMETER10 LSB | " | " |
| | | 0E | 1 | 00-7F | INSERTION EFFECT 1 PART | Part1...4 (0...3)<br>AD1, AD2 (64, 65)<br>OFF (127) | " |
| TOTAL SIZE | | 0F | | | | | |
| 0C | 01 | 00 | 2 | 00-7F | INSERTION EFFECT 2 TYPE MSB | refer to Effect Program List | depends on performance number |
| | | 01 | | 00-7F | INSERTION EFFECT 2 TYPE LSB | " | " |
| | | 02 | 2 | 00-7F | INSERTION EFFECT 2 PARAMETER1 MSB | " | " |
| | | 03 | | 00-7F | INSERTION EFFECT 2 PARAMETER1 LSB | " | " |
| | | 04 | 2 | 00-7F | INSERTION EFFECT 2 PARAMETER2 MSB | " | " |
| | | 05 | | 00-7F | INSERTION EFFECT 2 PARAMETER2 LSB | " | " |
| | | 06 | 2 | 00-7F | INSERTION EFFECT 2 PARAMETER3 MSB | " | " |
| | | 07 | | 00-7F | INSERTION EFFECT 2 PARAMETER3 LSB | " | " |
| | | 08 | 2 | 00-7F | INSERTION EFFECT 2 PARAMETER4 MSB | " | " |
| | | 09 | | 00-7F | INSERTION EFFECT 2 PARAMETER4 LSB | " | " |
| | | 0A | 2 | 00-7F | INSERTION EFFECT 2 PARAMETER5 MSB | " | " |
| | | 0B | | 00-7F | INSERTION EFFECT 2 PARAMETER5 LSB | " | " |
| | | 0C | 2 | 00-7F | INSERTION EFFECT 2 PARAMETER10 MSB | " | " |
| | | 0D | | 00-7F | INSERTION EFFECT 2 PARAMETER10 LSB | " | " |
| | | 0E | 1 | 00-7F | INSERTION EFFECT 2 PART | Part1...4 (0...3)<br>AD1, AD2 (64, 65)<br>OFF (127) | " |
| TOTAL SIZE | | 0F | | | | | |

**< Table 3 - 3 >**

MIDI Parameter Change table (INTERNAL PERFORMANCE)

| Address (H) | | | Size (H) | Data (H) | Parameter | Description | Default value (H) |
|---|---|---|---|---|---|---|---|
| 3n | pp | 00 | 1 | 00 - 7F | PROGRAM NUMBER | 1...128 | depends on performance number |
| 3n | pp | 01 | 1 | 00 - 7F | BANK SELECT | 0...127 | " |
| 3n | pp | 02 | 1 | 00 - 7F | VOLUME | 0...127 | " |
| 3n | pp | 03 | 1 | "00,01-7F" | PAN | RND, L63...C...R63 | " |
| 3n | pp | 04 | 1 | 00 - 7F | DRY SEND LEVEL | 0...127 | " |
| 3n | pp | 05 | 1 | 00 - 7F | CHORUS SEND | 0...127 | " |
| 3n | pp | 06 | 1 | 00 - 7F | REVERB SEND | 0...127 | " |
| 3n | pp | 07 | 1 | 00 - 7F | VARIATION SEND | 0...127 | " |
| 3n | pp | 08 | 1 | 28 - 58 | NOTE SHIFT | -24...0...+24 [semitones] | " |
| 3n | pp | 09 | 1 | 00 - 7F | LOW PASS FILTER CUTOFF FREQUENCY | -64...0...+63 | " |
| 3n | pp | 0A | 1 | 00 - 7F | LOW PASS FILTER RESONANCE | -64...0...+63 | " |
| 3n | pp | 0B | 1 | 00 - 7F | EG ATTACK TIME | -64...0...+63 | " |
| 3n | pp | 0C | 1 | 00 - 7F | EG DECAY TIME | -64...0.. +63 | " |
| 3n | pp | 0D | 1 | 00 - 7F | EG RELEASE TIME | -64...0...+63 | " |
| 3n | pp | 0E | 1 | 00 - 7F | VIBRATO RATE | -64...0...+63 | " |
| 3n | pp | 0F | 1 | 00 - 7F | VIBRATO DEPTH | -64...0.. +63 | " |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 3n | pp | 10 | 1 | 00 - 7F | VIBRATO DELAY | -64...0...+63 | " |
| 3n | pp | 11 | 2 | 00 - 0F | DETUNE | -12.8...0...+12.7 [Hz] | " |
| 3n | pp | 12 | | 00 - 7F | | 1st bit3-0→bit7-4 | |
| | | | | | | 2nd bit3-0→bit3-0 | |
| | | | | | Rcv NOTE MESSAGE | 1st bit6: OFF, ON (0, 1) | |
| | | | | | MONO/POLY MODE | 1st bit5: MONO, POLY (0, 1) | |
| 3n | pp | 13 | 1 | 00 - 7F | PITCH EG INITIAL LEVEL | 0...127 | " |
| 3n | pp | 14 | 1 | 00 - 7F | PITCH EG ATTACK TIME | 0...127 | " |
| 3n | pp | 15 | 1 | 00 - 7F | PITCH EG RELEASE LEVEL | 0...127 | " |
| 3n | pp | 16 | 1 | 00 - 7F | PITCH EG RELEASE TIME | 0...127 | " |
| 3n | pp | 17 | 1 | 00 - 7F | VELOCITY SENSE DEPTH | 0...127 | " |
| 3n | pp | 18 | 1 | 00 - 7F | VELOCITY SENSE OFFSET | 0...127 | " |
| 3n | pp | 19 | 1 | 00 - 7F | NOTE LIMIT LOW | C-2...G8 | " |
| 3n | pp | 1A | 1 | 00 - 7F | NOTE LIMIT HIGH | C-2...G8 | " |
| 3n | pp | 1B | 1 | 01 - 7F | VELOCITY LIMIT LOW | 1...127 | " |
| 3n | pp | 1C | 1 | 01 - 7F | VELOCITY LIMIT HIGH | 1...127 | " |
| 3n | pp | 1D | 1 | 00 - 7F | EQ BASS | -64 ...0...+63 (-12 - +12 [dB]) | " |
| 3n | pp | 1E | 1 | 00 - 7F | EQ TREBLE | -64 ...0...+63 (-12 - +12 [dB]) | " |
| 3n | pp | 1F | 1 | 04 - 28 | EQ BASS frequency | 32...2.0k [Hz] | " |
| 3n | pp | 20 | 1 | 1C - 3A | EQ TREBLE frequency | 500...16.0k [Hz] | " |
| 3n | pp | 21 | 1 | 00 - 7F | HIGH PASS FILTER CUTOFF FREQUENCY | -64...0...+63 | " |
| TOTAL SIZE | | | 22 | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 3n | pp | 30 | 2 | 00 - 7F | BANK SELECT MSB | 0...127 | depends on performance number |
| 3n | pp | | | 00 - 7F | BANK SELECT LSB | 0...127 | " |
| TOTAL SIZE | | | 2 | | | | |

n: performance part number (00-03)
pp:performance number (00-63)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 40 | pp | 00 | 0C | 20 - 7F | PERFORMANCE NAME | 32...127 (ASCII CHARACTER) | depends on performance number |
| | pp | 0C | 01 | 00 - 7F | PERFORMANCE VOLUME | 0...127 | " |
| | pp | 0D | 01 | 01 - 7F | PERFORMANCE PAN | L63...C...R63 (1...64...127) | " |
| | pp | 0E | 01 | 00 - 60 | AC1 CC NUMBER | 0...95, CAT | " |
| | pp | 0F | 01 | 00 - 01 | A/D INPUT | OFF, ON | " |
| | pp | 10 | 01 | 00 - 7F | MW LFO PMOD DEPTH | 0...127 | " |
| | pp | 11 | 01 | 00 - 7F | MW LFO FMOD DEPTH | 0...127 | " |
| | pp | 12 | 01 | 28 - 58 | BEND PITCH CONTROL | -24..0..+24 [semitones] | " |
| | pp | 13 | 01 | 00 - 7F | AC1 FILTER CONTROL | -64 ...0...+63 | " |
| | pp | 14 | 01 | 00 - 7F | AC1 AMPLITUDE CONTROL | -100...0...+100 [%] | " |
| | pp | 15 | 01 | 00 - 7F | AC1 LFO FMOD DEPTH | 0...127 | " |
| | pp | 16 | 01 | 00 - 01 | PORTAMENTO SWITCH | OFF, ON (0, 1) | " |
| | pp | 17 | 01 | 00 - 7F | PORTAMENTO TIME | 0...127 | " |
| TOTAL SIZE | | | 18 | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 40 | pp | 20 | 2 | 00-7F | REVERB TYPE MSB | refer to Effect Program List | depends on performance number |
| | pp | 21 | | 00-7F | REVERB TYPE LSB | " | " |
| | pp | 22 | 1 | 00-7F | REVERB PARAMETER 1 | " | " |
| | pp | 23 | 1 | 00-7F | REVERB PARAMETER 2 | " | " |
| | pp | 24 | 1 | 00-7F | REVERB PARAMETER 3 | " | " |
| | pp | 25 | 1 | 00-7F | REVERB PARAMETER 4 | " | " |
| | pp | 26 | 1 | 00-7F | REVERB PARAMETER 5 | " | " |
| | pp | 27 | 1 | 00-7F | REVERB RETURN | -∞dB...0dB...+6dB (0...96...127) | " |
| | pp | 28 | 1 | 01-7F | REVERB PAN | L63...C...R63 | " |
| | pp | 29 | 2 | 00-7F | CHORUS TYPE MSB | refer to Effect Program List | " |
| | pp | 2A | | 00-7F | CHORUS TYPE LSB | " | " |
| | pp | 2B | 1 | 00-7F | CHORUS PARMETER 1 | " | " |
| | pp | 2C | 1 | 00-7F | CHORUS PARMETER 2 | " | " |
| | pp | 2D | 1 | 00-7F | CHORUS PARMETER 3 | " | " |
| | pp | 2E | 1 | 00-7F | CHORUS PARMETER 4 | " | " |
| | pp | 2F | 1 | 00-7F | CHORUS PARMETER 5 | " | " |
| | pp | 30 | 1 | 00-7F | CHORUS RETURN | -∞dB...0dB...+6dB (0...96...127) | " |
| | pp | 31 | 1 | 01-7F | CHORUS PAN | L63...C...R63 | " |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | pp | 32 | 1 | 00-7F | SEND CHORUS TO REVERB | -∞dB...0dB...+6dB (0...96...127) | " |
| | pp | 33 | 2 | 00-7F | VARIATION TYPE MSB | refer to Effect Program List | " |
| | pp | 34 | | 00-7F | VARIATION TYPE LSB | " | " |
| | pp | 35 | 2 | 00-7F | VARIATION PARMETER 1 MSB | " | " |
| | pp | 36 | | 00-7F | VARIATION PARMETER 1 LSB | " | " |
| | pp | 37 | 2 | 00-7F | VARIATION PARMETER 2 MSB | " | " |
| | pp | 38 | | 00-7F | VARIATION PARMETER 2 LSB | " | " |
| | pp | 39 | 2 | 00-7F | VARIATION PARMETER 3 MSB | " | " |
| | pp | 3A | | 00-7F | VARIATION PARMETER 3 LSB | " | " |
| | pp | 3B | 2 | 00-7F | VARIATION PARMETER 4 MSB | " | " |
| | pp | 3C | | 00-7F | VARIATION PARMETER 4 LSB | " | " |
| | pp | 3D | 2 | 00-7F | VARIATION PARMETER 5 MSB | " | " |
| | pp | 3E | | 00-7F | VARIATION PARMETER 5 LSB | " | " |
| | pp | 3F | 2 | 00-7F | VARIATION PARMETER 10 MSB | " | " |
| | pp | 40 | | 00-7F | VARIATION PARMETER 10 LSB | " | " |
| | pp | 41 | 1 | 00-7F | VARIATION RETURN | -∞dB...0dB...+6dB (0...96...127) | " |
| | pp | 42 | 1 | 01-7F | VARIATION PAN | L63...C...R63 (1...64...127) | " |
| | pp | 43 | 1 | 00-7F | SEND VARIATION TO REVERB | -∞dB...0dB...+6dB (0...96...127) | " |
| | pp | 44 | 1 | 00-7F | SEND VARIATION TO CHORUS | -∞dB...0dB...+6dB (0...96...127) | " |
| | pp | 45 | 1 | 00-7F | AC1 VARIATION CONTROL DEPTH | 0...127 | " |
| | pp | 46 | 1 | 00-01 | VARIATION CONNECTION | INSERTION, SYSTEM | " |
| | pp | 47 | 1 | 00-7F | VARATION PART | Part1...4 (0...3)<br>AD1, AD2 (64, 65)<br>OFF (127) | " |
| TOTAL SIZE | | | 28 | | | | |
| 40 | pp | 70 | 1 | 00 - 04 | EQ TYPE | flat, jazz, pops, rock, concert | depends on performance number |
| | pp | 71 | 1 | 34 - 4C | EQ GAIN1 | -12...0...+12 [dB] | " |
| | pp | 72 | 1 | 34 - 4C | EQ GAIN2 | -12...0...+12 [dB] | " |
| | pp | 73 | 1 | 34 - 4C | EQ GAIN3 | -12...0...+12 [dB] | " |
| | pp | 74 | 1 | 34 - 4C | EQ GAIN4 | -12...0...+12 [dB] | " |
| | pp | 75 | 1 | 34 - 4C | EQ GAIN5 | -12...0...+12 [dB] | " |
| TOTAL SIZE | | | 06 | | | | |
| 50 | pp | 00 | 2 | 00-7F | INSERTION EFFECT 1 TYPE MSB | refer to Effect Program List | depends on performance number |
| | pp | 01 | | 00-7F | INSERTION EFFECT 1 TYPE LSB | " | " |
| | pp | 02 | 2 | 00-7F | INSERTION EFFECT 1 PARAMETER1 MSB | " | " |
| | pp | 03 | | 00-7F | INSERTION EFFECT 1 PARAMETER1 LSB | " | " |
| | pp | 04 | 2 | 00-7F | INSERTION EFFECT 1 PARAMETER2 MSB | " | " |
| | pp | 05 | | 00-7F | INSERTION EFFECT 1 PARAMETER2 LSB | " | " |
| | pp | 06 | 2 | 00-7F | INSERTION EFFECT 1 PARAMETER3 MSB | " | " |
| | pp | 07 | | 00-7F | INSERTION EFFECT 1 PARAMETER3 LSB | " | " |
| | pp | 08 | 2 | 00-7F | INSERTION EFFECT 1 PARAMETER4 MSB | " | " |
| | pp | 09 | | 00-7F | INSERTION EFFECT 1 PARAMETER4 LSB | " | " |
| | pp | 0A | 2 | 00-7F | INSERTION EFFECT 1 PARAMETER5 MSB | " | " |
| | pp | 0B | | 00-7F | INSERTION EFFECT 1 PARAMETER5 LSB | " | " |
| | pp | 0C | 2 | 00-7F | INSERTION EFFECT 1 PARAMETER10 MSB | " | " |
| | pp | 0D | | 00-7F | INSERTION EFFECT 1 PARAMETER10 LSB | " | " |
| | pp | 0E | 1 | 00-7F | INSERTION EFFECT 1 PART | Part1...4 (0...3)<br>AD1, AD2 (64, 65)<br>OFF (127) | " |
| TOTAL SIZE | | | 0F | | | | |
| 51 | pp | 00 | 2 | 00-7F | INSERTION EFFECT 2 TYPE MSB | refer to Effect Program List | depends on performance number |
| | pp | 01 | | 00-7F | INSERTION EFFECT 2 TYPE LSB | " | " |
| | pp | 02 | 2 | 00-7F | INSERTION EFFECT 2 PARAMETER1 MSB | " | " |
| | pp | 03 | | 00-7F | INSERTION EFFECT 2 PARAMETER1 LSB | " | " |
| | pp | 04 | 2 | 00-7F | INSERTION EFFECT 2 PARAMETER2 MSB | " | " |
| | pp | 05 | | 00-7F | INSERTION EFFECT 2 PARAMETER2 LSB | " | " |
| | pp | 06 | 2 | 00-7F | INSERTION EFFECT 2 PARAMETER3 MSB | " | " |
| | pp | 07 | | 00-7F | INSERTION EFFECT 2 PARAMETER3 LSB | " | " |
| | pp | 08 | 2 | 00-7F | INSERTION EFFECT 2 PARAMETER4 MSB | " | " |
| | pp | 09 | | 00-7F | INSERTION EFFECT 2 PARAMETER4 LSB | " | " |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | pp | 0A | 2 | 00-7F | INSERTION EFFECT 2 PARAMETER5 MSB | - | - |
| | pp | 0B | | 00-7F | INSERTION EFFECT 2 PARAMETER5 LSB | - | - |
| | pp | 0C | 2 | 00-7F | INSERTION EFFECT 2 PARAMETER10 MSB | - | - |
| | pp | 0D | | 00-7F | INSERTION EFFECT 2 PARAMETER10 LSB | - | - |
| | pp | 0E | 1 | 00-7F | INSERTION EFFECT 2 PART | Part1...4 (0...3)<br>AD1, AD2 (64, 65)<br>OFF (127) | - |
| TOTAL SIZE | | 0F | | | | | |
| 60 | pp | 00 | 64 | 00-7F | PLUGIN BOARD 1 PARAMETER | depends on Plugin Board | depends on performance number |
| TOTAL SIZE | | | 64 | | | | |
| 61 | pp | 00 | 64 | 00-7F | PLUGIN BOARD 2 PARAMETER | depends on Plugin Board | depends on performance number |
| TOTAL SIZE | | | 64 | | | | |

pp: performance number (00-63)

## < Table 4 - 1 >

VL System Parameter

| Address (H) | | | Size (H) | Data (H) | Parameter | Description | Default value (H) |
|---|---|---|---|---|---|---|---|
| 00 | 00 | 00 | B | | NOT USED | | -- |
| | | 0B | 1 | 00-01 | BREATH CONTROL NUMBER | BC,EXPRESSION | 00 |
| | | 0C | 1 | 30-50 | BREATH CONTROL CURVE | -16 - 16 | 40 |
| | | 0D | 1 | 00-01 | WX LIP LOCK | OFF/ON | 00 |
| | | 0E | 1 | 00-01 | BREATH SET LOCK | OFF/ON | 00 |
| | | 0F | 1 | 00-01 | WX LIP | NORMAL,EXPAND | 00 |
| | | 10 | 1 | 00-02 | BREATH MODE | BC/WX,VELOCITY,TOUCH EG | 00 |
| | | 11 | 1 | 00-7F | VELOCITY DEPTH | 0 - 127 | 30 |
| | | 12 | 1 | 00-7F | VELOCITY OFFSET | 0 - 127 | 50 |
| | | 13 | 1 | 00-7F | TOUCH EG TIME | 0 - 127 | 2A |
| | | 14 | 1 | 00-7F | AT LOW DEPTH | 0 - 127 | 1B |
| | | 15 | 1 | 00-7F | AT LOW OFFSET | 0 - 127 | 50 |
| | | 16 | 1 | 00-7F | AT HIGH DEPTH | 0 - 127 | 25 |
| | | 17 | 1 | 00-7F | AT HIGH OFFSET | 0 - 127 | 65 |
| TOTAL SIZE | | | 18 | | | | |

Only addresses 00000B–000017 are supported for parameter changes.

## < Table 4 - 2 >

VL Current Voice/Comon Misc Parameter

| Address (H) | | | Size (H) | Data (H) | Parameter | Description |
|---|---|---|---|---|---|---|
| 10 | 00 | 00 | 1 | 20 - 7F | VOICE NAME #1 | 32 - 127 (ASCII) |
| | | 01 | 1 | 20 - 7F | VOICE NAME #2 | 32 - 127 (ASCII) |
| | | 02 | 1 | 20 - 7F | VOICE NAME #3 | 32 - 127 (ASCII) |
| | | 03 | 1 | 20 - 7F | VOICE NAME #4 | 32 - 127 (ASCII) |
| | | 04 | 1 | 20 - 7F | VOICE NAME #5 | 32 - 127 (ASCII) |
| | | 05 | 1 | 20 - 7F | VOICE NAME #6 | 32 - 127 (ASCII) |
| | | 06 | 1 | 20 - 7F | VOICE NAME #7 | 32 - 127 (ASCII) |
| | | 07 | 1 | 20 - 7F | VOICE NAME #8 | 32 - 127 (ASCII) |
| | | 08 | 1 | | NOT USED | |
| | | 09 | 1 | 00 - 7F | VOICE LEVEL | 0 - 127 |
| | | 0A | 1 | 00 - 02 | ASSIGN MODE | BOTTOM, TOP, LAST |
| | | 0B | 2 | 00 00 - 1F 1F | POLY EXPAND | off - 32 > 32 |
| | | 0D | 1 | 00 - 01 | PORTAMENTO MODE | FULL TIME, FINGERED |
| | | 0E | 1 | | NOT USED | |
| TOTAL SIZE | | | 0F | | | |

### < Table 4 - 3 >

VL Part Parameter

| Address (H) | | | Size (H) | Data (H) | Parameter | Description | Default value (H) |
|---|---|---|---|---|---|---|---|
| 09 | 00 | 17 | 1 | 00 - 7F | AMP LEVEL SCALE BREAK POINT | C-2 - G8 | 3C |
| | | 18 | 1 | 00 - 7F | DEPTH | -64 - +63 | 40 |
| | | 19 | 1 | 00 - 7F | FILTER CUTOFF SCALE BREAK POINT | C-2 - G8 | 3C |
| | | 1A | 1 | 00 - 7F | DEPTH | -64 - +63 | 40 |
| | | 1B | 1 | | NOT USED | | |
| | | 1C | 1 | | NOT USED | | |
| TOTAL SIZE | | | 06 | | | | |

### < Table 4 - 4 >

VL Current Voice/Element Parameter

| Address (H) | | | Size (H) | Data (H) | Parameter | Description |
|---|---|---|---|---|---|---|
| 20 | 00 | 00 | 1 | | NOT USED | |
| | 00 | 01 | 1 | | NOT USED | |
| | 00 | 02 | 1 | | NOT USED | |
| | 00 | 03 | 1 | | NOT USED | |
| | 00 | 04 | 1 | | NOT USED | |
| | 00 | 05 | 1 | | NOT USED | |
| | 00 | 06 | 1 | | NOT USED | |
| | 00 | 07 | 1 | | NOT USED | |
| | 00 | 08 | 1 | | NOT USED | |
| | 00 | 09 | 1 | | NOT USED | |
| | 00 | 0A | 1 | 00 - 01 | EXPRESSION MODE | BC, VOLUME |
| | 00 | 0B | 1 | 00 - 62 | PRESSURE CONTROL NO. | off - 95, AT, VELOCITY, PB |
| | 00 | 0C | 2 | 01 01 - 00 7F | DEPTH | -127 - +127 |
| | 00 | 0E | 1 | 70 - 10 | CURVE | -16 - +16 |
| | 00 | 0F | 1 | 00 - 62 | FILTER CONTROL NO. | off - 95, AT, VELOCITY, PB |
| | 00 | 10 | 2 | 01 01 - 00 7F | DEPTH | -127 - +127 |
| | 00 | 12 | 1 | 70 - 10 | CURVE | -16 - +16 |
| | 00 | 13 | 1 | 00 - 62 | AMPLITUDE CONTROL NO. | off - 95, AT, VELOCITY, PB |
| | 00 | 14 | 2 | 01 01 - 00 7F | DEPTH | -127 - +127 |
| | 00 | 16 | 1 | 70 - 10 | CURVE | -16 - +16 |
| | 00 | 17 | 1 | 00 - 62 | EMBOUCHURE CONTROL NO. | off - 95, AT, VELOCITY, PB |
| | 00 | 18 | 2 | 01 01 - 00 7F | UPPER DEPTH | -127 - +127 |
| | 00 | 1A | 2 | 01 01 - 00 7F | LOWER DEPTH | -127 - +127 |
| | 00 | 1C | 1 | 00 - 01 | MODE | CENTER BASE, MINIMUM BASE |
| | 00 | 1D | 1 | 00 - 62 | TONGUING CONTROL NO. | off - 95, AT, VELOCITY, PB |
| | 00 | 1E | 2 | 01 01 - 00 7F | DEPTH | -127 - +127 |
| | 00 | 20 | 1 | 70 - 10 | CURVE | -16 - +16 |
| | 00 | 21 | 1 | 00 - 62 | SCREAM CONTROL NO. | off - 95, AT, VELOCITY, PB |
| | 00 | 22 | 2 | 01 01 - 00 7F | DEPTH | -127 - +127 |
| | 00 | 24 | 1 | 70 - 10 | CURVE | -16 - +16 |
| | 00 | 25 | 1 | 00 - 62 | BREATH NOISE CONTROL NO. | off - 95, AT, VELOCITY, PB |
| | 00 | 26 | 2 | 01 01 - 00 7F | DEPTH | -127 - +127 |
| | 00 | 28 | 1 | 70 - 10 | CURVE | -16 - +16 |
| | 00 | 29 | 1 | 00 - 62 | GROWL CONTROL NO. | off - 95, AT, VELOCITY, PB |
| | 00 | 2A | 2 | 01 01 - 00 7F | DEPTH | -127 - +127 |
| | 00 | 2C | 1 | 70 - 10 | CURVE | -16 - +16 |
| | 00 | 2D | 1 | 00 - 62 | THROAT FORMANT CONTROL NO. | off - 95, AT, VELOCITY, PB |
| | 00 | 2E | 2 | 01 01 - 00 7F | DEPTH | -127 - +127 |
| | 00 | 30 | 1 | 70 - 10 | CURVE | -16 - +16 |
| | 00 | 31 | 1 | 00 - 62 | HARMONIC ENHANCER CONTROL NO. | off - 95, AT, VELOCITY, PB |
| | 00 | 32 | 2 | 01 01 - 00 7F | DEPTH | -127 - +127 |
| | 00 | 34 | 1 | 70 - 10 | CURVE | -16 - +16 |
| | 00 | 35 | 1 | 00 - 62 | DAMPING CONTROL NO. | off - 95, AT, VELOCITY, PB |
| | 00 | 36 | 2 | 01 01 - 00 7F | DEPTH | -127 - +127 |
| | 00 | 38 | 1 | 70 - 10 | CURVE | -16 - +16 |
| | 00 | 39 | 1 | 00 - 62 | ABSORPTION CONTROL NO. | off - 95, AT, VELOCITY, PB |

| | | | | | | |
|---|---|---|---|---|---|---|
| | 00 | 3A | 2 | 01 01 - 00 7F | DEPTH | -127 - +127 |
| | 00 | 3C | 1 | 70 - 10 | CURVE | -16 - +16 |
| | 00 | 3D | | | | |
| | : | : | | | reserve | |
| | 0A | 6A | | | | |
| TOTAL SIZE | | | 56B | | | |

**< Table 4 - 5 >**

VL Custom Voice Parameter

| Address (H) | | | Size (H) | Data (H) | Parameter | Description |
|---|---|---|---|---|---|---|
| 30 | 00 | 0n | 1 | 20 - 7F | VOICE NAME #1 | 32-127(ASCII) |
| | | | 1 | 20 - 7F | VOICE NAME #2 | 32-127(ASCII) |
| | | | 1 | 20 - 7F | VOICE NAME #3 | 32-127(ASCII) |
| | | | 1 | 20 - 7F | VOICE NAME #4 | 32-127(ASCII) |
| | | | 1 | 20 - 7F | VOICE NAME #5 | 32-127(ASCII) |
| | | | 1 | 20 - 7F | VOICE NAME #6 | 32-127(ASCII) |
| | | | 1 | 20 - 7F | VOICE NAME #7 | 32-127(ASCII) |
| | | | 1 | 20 - 7F | VOICE NAME #8 | 32-127(ASCII) |
| | | | 1 | | NOT USED | |
| | | | 1 | 00-7F | VOICE LEVEL | 0 - 127 |
| | | | 1 | 00-02 | ASSIGN MODE | BOTTOM,TOP,LAST |
| | | | 2 | | NOT USED | |
| | | | 1 | 00-01 | PORTAMENTO MODE | FULLTIME,FINGERED |
| | | | B5 | | NOT USED | |
| TOTAL SIZE | | | A3 | | | |
| | | | | | | |
| 31 | 00 | 0n | 1 | | NOT USED | |
| | | | 1 | | NOT USED | |
| | | | 1 | | NOT USED | |
| | | | 1 | | NOT USED | |
| | | | 1 | | NOT USED | |
| | | | 1 | | NOT USED | |
| | | | 1 | | NOT USED | |
| | | | 1 | | NOT USED | |
| | | | 1 | | NOT USED | |
| | | | 1 | | NOT USED | |
| | | | 1 | 00-01 | EXPRESSION MODE | BC,VOLUME |
| | | | 1 | 00-62 | PRESSURE CONTROL NO. | off - 95,AT,VELOCITY,PB |
| | | | 2 | 01 01-00 7F | DEPTH | -127 - +127 |
| | | | 1 | 70-10 | CURVE | -16 - +16 |
| | | | 1 | 00-62 | FILTER CONTROL NO. | off - 95,AT,VELOCITY,PB |
| | | | 2 | 01 01-00 7F | DEPTH | -127 - +127 |
| | | | 1 | 70-10 | CURVE | -16 - +16 |
| | | | 1 | 00-62 | AMPLITUDE CONTROL NO. | off - 95,AT,VELOCITY,PB |
| | | | 2 | 01 01-00 7F | DEPTH | -127 - +127 |
| | | | 1 | 70-10 | CURVE | -16 - +16 |
| | | | 1 | 00-62 | EMBOUCHURE CONTROL NO. | off - 95,AT,VELOCITY,PB |
| | | | 2 | 01 01-00 7F | UPPER DEPTH | -127 - +127 |
| | | | 2 | 01 01-00 7F | LOWER DEPTH | -127 - +127 |
| | | | 1 | 00-01 | MODE | CENTER BASE,MINIMUM BASE |
| | | | 1 | 00-62 | TONGUING CONTROL NO. | off - 95,AT,VELOCITY,PB |
| | | | 2 | 01 01-00 7F | DEPTH | -127 - +127 |
| | | | 1 | 70-10 | CURVE | -16 - +16 |
| | | | 1 | 00-62 | SCREAM CONTROL NO. | off - 95,AT,VELOCITY,PB |
| | | | 2 | 01 01-00 7F | DEPTH | -127 - +127 |
| | | | 1 | 70-10 | CURVE | -16 - +16 |
| | | | 1 | 00-62 | BREATH NOISE CONTROL NO. | off - 95,AT,VELOCITY,PB |
| | | | 2 | 01 01-00 7F | DEPTH | -127 - +127 |
| | | | 1 | 70-10 | CURVE | -16 - +16 |
| | | | 1 | 00-62 | GROWL CONTROL NO. | off - 95,AT,VELOCITY,PB |
| | | | 2 | 01 01-00 7F | DEPTH | -127 - +127 |
| | | | 1 | 70-10 | CURVE | -16 - +16 |

| | | | | |
|---|---|---|---|---|
| | 1 | 00-62 | THROAT FORMANT CONTROL NO. | off - 95,AT,VELOCITY,PB |
| | 2 | 01 01-00 7F | DEPTH | -127 - +127 |
| | 1 | 70-10 | CURVE | -16 - +16 |
| | 1 | 00-62 | HARMONIC ENHANCER CONTROL NO. | off - 95,AT,VELOCITY,PB |
| | 2 | 01 01-00 7F | DEPTH | -127 - +127 |
| | 1 | 70-10 | CURVE | -16 - +16 |
| | 1 | 00-62 | DAMPING CONTROL NO. | off - 95,AT,VELOCITY,PB |
| | 2 | 01 01-00 7F | DEPTH | -127 - +127 |
| | 1 | 70-10 | CURVE | -16 - +16 |
| | 1 | 00-62 | ABSORPTION CONTROL NO. | off - 95,AT,VELOCITY,PB |
| | 2 | 01 01-00 7F | DEPTH | -127 - +127 |
| | 1 | 70-10 | CURVE | -16 - +16 |
| | 52E | | reserve | |
| TOTAL SIZE | 56B | | | |

n = Voice Number(0 - 5)

## < Table 4 - 6 >

VL Internal Voice Parameter

| Address (H) | Size (H) | Data (H) | Parameter | Description |
|---|---|---|---|---|
| 40 00 nn | 1 | 20 - 7F | VOICE NAME #1 | 32 - 127 (ASCII) |
| | 1 | 20 - 7F | VOICE NAME #2 | 32 - 127 (ASCII) |
| | 1 | 20 - 7F | VOICE NAME #3 | 32 - 127 (ASCII) |
| | 1 | 20 - 7F | VOICE NAME #4 | 32 - 127 (ASCII) |
| | 1 | 20 - 7F | VOICE NAME #5 | 32 - 127 (ASCII) |
| | 1 | 20 - 7F | VOICE NAME #6 | 32 - 127 (ASCII) |
| | 1 | 20 - 7F | VOICE NAME #7 | 32 - 127 (ASCII) |
| | 1 | 20 - 7F | VOICE NAME #8 | 32 - 127 (ASCII) |
| | 1 | 00 - 7F | VOICE LEVEL | 0 - 127 |
| | 1 | 00 - 02 | ASSIGN MODE | BOTTOM, TOP, LAST |
| | 2D | | NOT USED | |
| | 1 | 00 - 7F | AMP LEVEL SCALE BREAK POINT | C-2 - G8 |
| | 1 | 00 - 7F | DEPTH | -64 - +63 |
| | 1 | 00 - 7F | FILTER CUTOFF SCALE BREAK POINT | C-2 - G8 |
| | 1 | 00 - 7F | DEPTH | -64 - +64 |
| | 1 | 00 - 02 | BANK POINTER | PRESET1, PRESET2, CUSTOM |
| | 1 | 00 - 7F | PROGRAM POINTER | 1 - 128 |
| | 33 | | NOT USED | |
| | 1 | 00 - 01 | EXPRESSION MODE | BC, VOLUME |
| | 1 | 00 - 62 | PRESSURE CONTROL NO. | off - 95, AT, VELOCITY, PB |
| | 2 | 01 01 - 00 7F | DEPTH | -127 - +127 |
| | 1 | 70 - 10 | CURVE | -16 - +16 |
| | 1 | 00 - 62 | FILTER CONTROL NO. | off - 95, AT, VELOCITY, PB |
| | 2 | 01 01 - 00 7F | DEPTH | -127 - +127 |
| | 1 | 70 - 10 | CURVE | -16 - +16 |
| | 1 | 00 - 62 | AMPLITUDE CONTROL NO. | off - 95, AT, VELOCITY, PB |
| | 2 | 01 01 - 00 7F | DEPTH | -127 - +127 |
| | 1 | 70 - 10 | CURVE | -16 - +16 |
| | 1 | 00 - 62 | ENBOUCHURE CONTROL NO. | off - 95, AT, VELOCITY, PB |
| | 2 | 01 01 - 00 7F | UPPER DEPTH | -127 - +127 |
| | 2 | 01 01 - 00 7F | LOWER DEPTH | -127 - +127 |
| | 1 | 00 - 01 | MODE | CENTER BASE, MINIMUM BASE |
| | 1 | 00 - 62 | TONGUING CONTROL NO. | off - 95, AT, VELOCITY, PB |
| | 2 | 01 01 - 00 7F | DEPTH | -127 - +127 |
| | 1 | 70 - 10 | CURVE | -16 - +16 |
| | 1 | 00 - 62 | SCREAM CONTROL NO. | off - 95, AT, VELOCITY, PB |
| | 2 | 01 01 - 00 7F | DEPTH | -127 - +127 |
| | 1 | 70 - 10 | CURVE | -16 - +16 |
| | 1 | 00 - 62 | BREATH NOISE CONTROL NO. | off - 95, AT, VELOCITY, PB |
| | 2 | 01 01 - 00 7F | DEPTH | -127 - +127 |
| | 1 | 70 - 10 | CURVE | -16 - +16 |
| | 1 | 00 - 62 | GROWL CONTROL NO. | off - 95, AT, VELOCITY, PB |

| | | | |
|---|---|---|---|
| 2 | 01 01 - 00 7F | DEPTH | -127 - +127 |
| 1 | 70 - 10 | CURVE | -16 - +16 |
| 1 | 00 - 62 | THROAT FORMANT CONTROL NO. | off - 95, AT, VELOCITY, PB |
| 2 | 01 01 - 00 7F | DEPTH | -127 - +127 |
| 1 | 70 - 10 | CURVE | -16 - +16 |
| 1 | 00 - 62 | HARMONIC ENHANCER CONTROL NO. | off - 95, AT, VELOCITY, PB |
| 2 | 01 01 - 00 7F | DEPTH | -127 - +127 |
| 1 | 70 - 10 | CURVE | -16 - +16 |
| 1 | 00 - 62 | DAMPING CONTROL NO. | off - 95, AT, VELOCITY, PB |
| 2 | 01 01 - 00 7F | DEPTH | -127 - +127 |
| 1 | 70 - 10 | CURVE | -16 - +16 |
| 1 | 00 - 62 | ABSORPTION CONTROL NO. | off - 95, AT, VELOCITY, PB |
| 2 | 01 01 - 00 7F | DEPTH | -127 - +127 |
| 1 | 70 - 10 | CURVE | -16 - +16 |

TOTAL SIZE A3

nn = Voice Number (00 - 3F)

YAMAHA [ Tone Generator ]
Model MU100R MIDI Implementation Chart

Date :31-JUL-1997
Version : 1.0

| Function... | | Transmitted | Recognized | Remarks |
|---|---|---|---|---|
| Basic | Default | x | 1 - 16 | |
| Channel | Changed | x | 1 - 16 | |
| | Default | x | 3 | |
| Mode | Messages | x | 3, 4 (m=1) *2 | |
| | Altered | ********** | x | |
| Note | | x | 0 - 127 | |
| Number : | True voice | ********** | 0 - 127 | |
| Velocity | Note ON | x | o 9nH,v=1-127 | |
| | Note OFF | x | x | |
| After | Key's | x | o *1 | |
| Touch | Ch's | x | o *1 | |
| Pitch Bend | | x | o 0-24 semi *1 | |
| | 0,32 | x | o *1 | Bank Select |
| | 1,2,4,5,7 | x | o *1 | |
| | 10,11,13 | x | o *1 | |
| | 6,38 | x | o *1 | Data Entry |
| Control | 64-67 | x | o *1 | |
| | 71-74 | x | o *1 | Sound Controller |
| Change | 84 | x | o *1 | Portamento Cntrl |
| | 91,93,94 | x | o *1 | Effect Depth |
| | 96-97 | x | o *1 | RPN Inc,Dec |
| | 98-99 | x | o *1 | NRPN LSB,MSB |
| | 100-101 | x | o *1 | RPN LSB,MSB |
| | 120 | x | o | All Sound Off |
| | 121 | x | o | Reset All Cntrls |
| Prog | | x | o 0 - 127 | |
| Change : | True # | ********** | | |
| System Exclusive | | o *3 | o *3 | |
| : | Song Pos. | x | x | |
| Common : | Song Sel. | x | x | |
| : | Tune | x | x | |
| System : | Clock | x | x | |
| Real Time: | Commands | x | x | |
| Aux : | Local ON/OFF | x | x | |
| : | All Notes OFF | x | o(123-127) | |
| Mes- : | Active Sense | x | o | |
| sages : | Reset | x | x | |

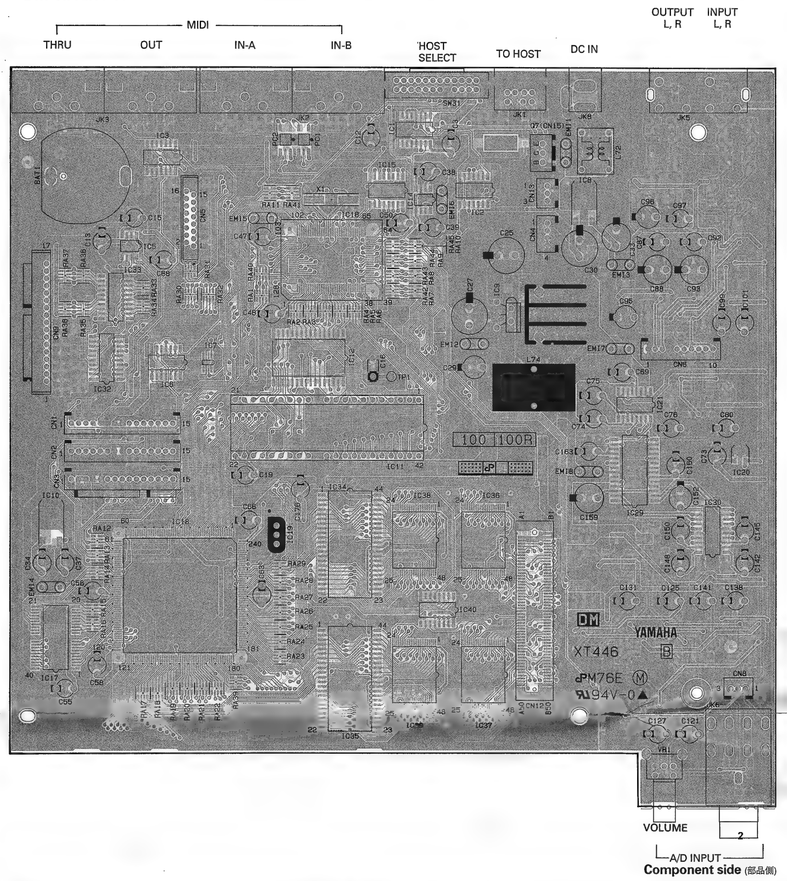
Notes:
*1 receive if switch is on.
*2 m is always treated as "1" regardless of its value.
*3 transmit/receive if exclusive switch is on.

Mode 1 : OMNI ON , POLY Mode 2 : OMNI ON ,MONO
Mode 3 : OMNI OFF, POLY Mode 4 : OMNI OFF,MONO

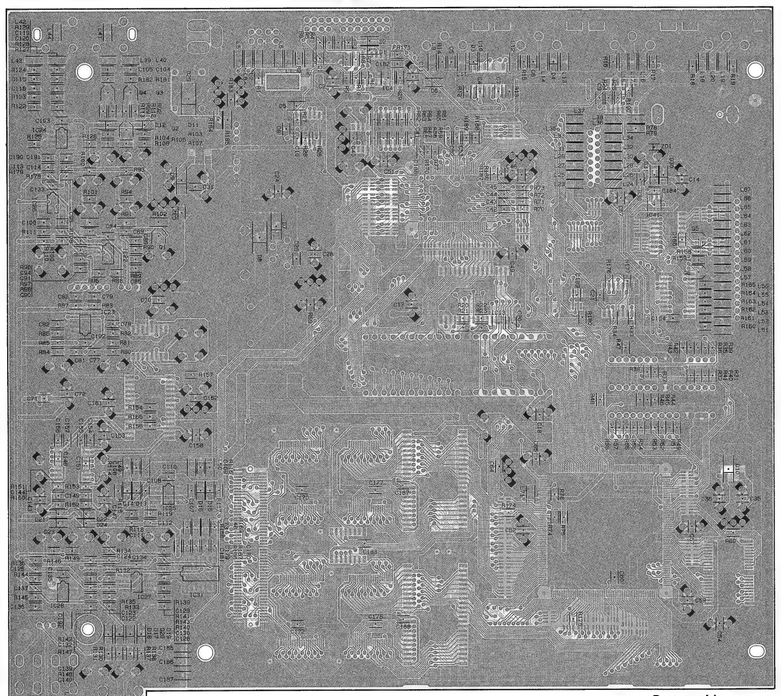
o : Yes
x : No

## ■ CIRCUIT BOARDS (シート基板図)

### • DM Circuit Board




Component side (部品側)



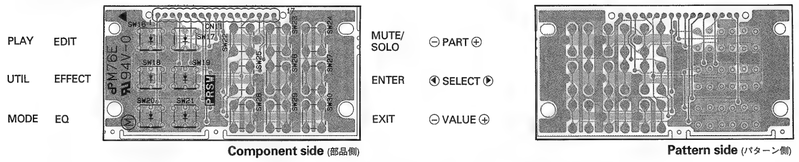
Pattern side (パターン側)

DM, PRSW : 2NA1-VZ01900 ⓪
PNJ, RE : 2NA1-VZ03660 ②





### • PRSW Circuit Board

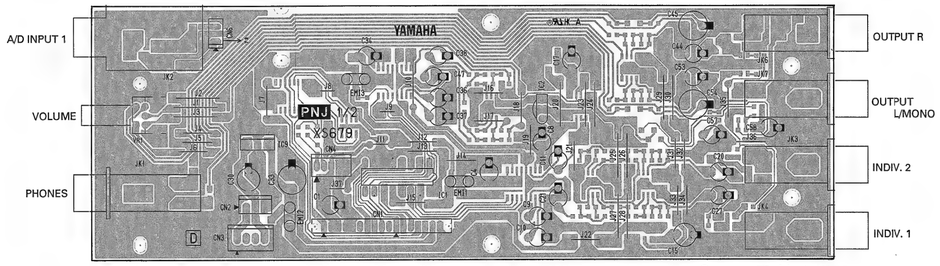



Component side (部品側)

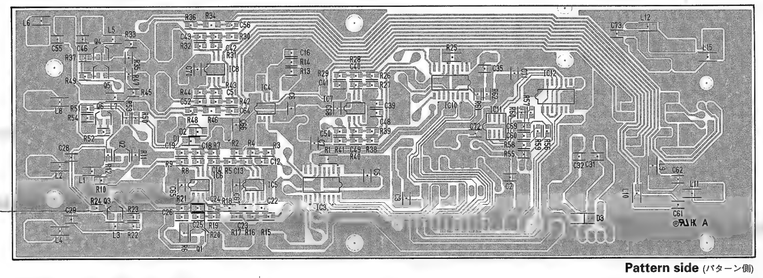


Pattern side (パターン側)

### • PNJ Circuit Board

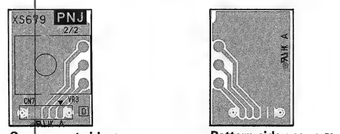



Component side (部品側)



Pattern side (パターン側)

### • RE Circuit Board

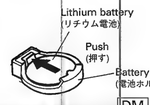



Component side (部品側)

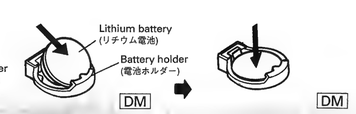


Pattern side (パターン側)

• When removing
(取外し時)




• When installing
(取付け時)




※ The lithium battery is not a part of the DM circuit board.
(リチウム電池はDMシートの構成部品ではありません)



Notes)
Circuit Board: DM (VZ019200) XT446C0
PRSW (VZ019100) XT446C0

**01. IC**
IC1: MC34051MEL (XP881A00)
IC2,3: TC74HC14AF-TP1 (XD657A00)
SOP
IC4: SC7SU04FEL (XI348A00)
INVERTER
IC5: M62021FP (XI686A00) RESET
IC6: TC74HC126AF (XS776A00)
BUS BUFFER
IC7: TC7W14FU (XN883A00) INVERTER
LINE TRANSCEIVE
IC8: UPC2906T (XT441A00)
REGULATOR +9V
IC9: SI-8050S (XT442A00)
REGULATOR +5V
IC10: UPC2933T (XS516A00)
REGULATOR +3.3V
IC12: M5M51008BFP-70LL (XS681A00)
SRAM
IC13: TC7S32F (XM588A00) OR
IC14: NJU7660M-T1 (XP596A00)
CONVERTER DC-DC
IC15: TC74HC4051AF-TP (XR056A00)
MULTIPLEXER
IC16: HD6432653(16M) (XT443A00) CPU
IC17: M5M44260CTP-7 (XS438A00)
70NS 4M
IC18: TC203C760HF-001 (XP738A00) or
TC203C760HF-002 (XS725A00)
SWP30
IC20: NJM78L05UA (XJ598A00)
REGULATOR +5V
IC25-28: UPC4570G2 (XF291A00) OP AMP
IC29: TLC320AD58C (XS892A00)
AD CONVERTER
IC30: TL32088 (XS893A00)
AD FRONT END
IC31: TC74HC4066AF-T1 (XG385A00)
ANALOG SWITCH
IC32: SN74HC273NSR (XH223A00) D-FF
IC33: TC74HC245F-T1 (XD603A00)
TRANSCEIVER
IC34: KM23C32000AG-4J (XS518A00)
MA ROM
IC35: KM23C32000AG-5J (XS743A00)
MA ROM
IC36: 23C16000WGY828 (XT445A00)
ROM1
IC37: 23C16000WGY829 (XT461A00)
ROM2
IC38: MX23C3210TC-10 (XT462A00)
ROM3
IC39: MX23C3210TC-10 (XT463A00)
ROM4
IC40: HD74LVC139FP (XS048A00) DEC
IC41: TC7S66F (XR682A00)
ANALOG SWITCH
70: 312V100 (XT714E00) EPROM
**2. Transistor**
Q 5,6: 2SCDTC143XK (VD456900)
**3. Diode**
D 3-5,13-24,30: MA221 (VB493900)
D 7,9,10: D1F60 (VS201100)
D 8,29: D3FP3 (VZ016600)
D 31: MA221 (VB493900)
**4. Zener Diode**
ZD 1: UDZ 3.6BTE-17 3. (VU171500)
**5. Photo Coupler**
PC 1,2: PC410T (VN686000)
**6. Quartz Crystal Unit**
X 1: 16M SMD-49 (VP864900)
IC19: DOC-49S5 (VV345500)
**7. Monolithic Ceramic Cap.**
C 1,123,130: SL 100P 50V J (UB052100)
C 2,4,7-9,14,17, 18,20,21,24,28, 31,32,35,36,40: F 0.100 25V Z (UB245100)
C 5,6,26,42-45, 64: F 0.010 50V Z (UB044100)
C 10: B 2200P 50V K (UB013220)
C 41,46,49,51,54, 57,59,60,62,65, 67,71,72,100: F 0.100 25V Z (UB245100)
C 52,53: SL 33P 50V J (UB051330)
C 106,107,124, 129: SL 47P 50V J (UB051470)
C 108,109,111, 112,185-187, 192: F 1.0 16V Z (VQ686200)
C 110,133-135, 143,147,153, 158,161,162, 164: F 0.100 25V Z (UB245100)
C 122,128: B 470P 50V K (UB012470)
C 126,132: B 1200P 50V K (UB013120)
C 136,140: SL 180P 50V J (UB052180)
C 137,139: B 3300P 50V K (UB013330)
C 144,146,149, 151: B 220P 50V K (UB012220)
C 154-157: B 4700P 50V K (UB013470)
C 165,167,168, 170,172,177-182: F 0.100 25V Z (UB245100)
C 183,184,189: F 0.100 25V Z (UB245100)
**8. Electrolytic Cap.**
C 3,13,19,47,48, 50,55,56,58,63, 66,68,101,176: 10.00 16.0V (UI537100)
C 15: 4.70 50.0V (UI566470)
C 25,27: 470.00 25.0V (UJ848470)
C 29,152: 100.00 16.0V (UJ838100)
C 30: 100.00 25.0V (UJ848100)
C 33,159: 220.00 16.0V (UJ838220)
C 34,37,73,142, 145,148,150, 160,163: 47.00 16.0V (UI537470)
C 38,39,138,141: 22.00 16.0V (UI537220)
C 121,127: 0.22 50.0V (UI565220)
C 125,131: 1.00 50.0V (UJ866100)
**9. Tantalum Cap.**
C 16: 4.70 16V M (FP736470)
**10. Coil**
L 74: 180UH (VZ017900)
**11. Chip Inductance**
L 9,10,12,13,15, 16,18,19,45,46, 48-50,73: 56U LEM2520 T 56 (VR243700)
**12. Solid Inductance (chip)**
L 1,2,5,6,8,11,14, 17,20,23-38,47, 51-67,71: BLM31A700SPT 70 (VL139800)
**13. Carbon Resistor (chip)**
L 3,4: 0.0 1/4 J (RD150000)
R 2,3,155,156: 56.0 0.1 J (RD254560)
R 4-6,9-11,24-26, 30-34,42,59: 10.0K 0.1 J (RD257100)
R 12,13,67,131, 138,170: 1.0K 0.1 J (RD256100)
R 14-19: 220.0 0.1 J (RD255220)
R 20,23,29: 0.0 0.0 J (RD250000)
R 27,61: 680.0 0.1 J (RD255680)
R 28: 680.0K 0.1 J (RD258680)
R 35-37,39-41,43, 44,48,56-58,74, 75,157: 100.0 0.1 J (RD255100)
R 38,45-47,49,51, 52,53,54,55: 47.0 0.1 J (RD254470)
R 60,77,108,136, 142,144,145, 147,148,166-168: 10.0K 0.1 J (RD257100)
R 62: 2.4K 0.1 J (RD256240)
R 63,135,143: 3.3K 0.1 J (RD256330)
R 64: 3.6K 0.1 J (RD256360)
R 65: 3.0K 0.1 J (RD256300)
R 66: 1.6K 0.1 J (RD256160)
R 68,160-165: 470.0 0.1 J (RD255470)
R 69: 2.0K 0.1 J (RD256200)
R 70-73,110,150-153,158,159, 171: 4.7K 0.1 J (RD256470)
R 76: 47.0K 0.1 J (RD257470)
R 78,79: 68.0 1/4 J (RD154680)
R 111: 22.0K 0.1 J (RD257220)
R 114,116: 47.0 1/4 J (RD154470)
R 115,117: 36.0K 0.1 J (RD257360)
R 118,119: 15.0K 0.1 J (RD257150)
R 130,132,134, 137,139,141, 146,149: 100.0K 0.1 J (RD258100)
R 133,140: 120.0K 0.1 J (RD258120)
R 169,176,177, 180,188,189, 191: 10.0K 0.1 J (RD257100)
R 174,175: 68.0 0.1 J (RD254680)
R 186: 4.7K 0.1 J (RD256470)
R 192: 100.0 0.1 J (RD255100)
**14. Resistor Array**
RA 1: 180 (RE045180)
RA 2-11,14-20: 68 (RE044680)
RA 12,13,30-32: 100 (RE045100)
RA 21-29,39: 68 (RE044680)
RA 33,34,37,38: 10K (RE047100)
RA 35,36: 4.7K (RE046470)
RA 40-45: 22K (RE047220)
**15. LC Filter**
EMI 1-6,8: STF-104ZB-TBM (VR193800)
L 72: PLT2003C (VG238200)
**16. Rotary Variable Resistor**
VR 1: RK09K12A0A6CA (VS666800)
A/D INPUT 2 VOLUME
**17. Slide Switch**
SW31: SSSF144-S06N-0 (VQ665200)
HOST SELECT
**18. Push Switch**
SW16-21: SKHQFN GREEN (VK701100)
SW16:PLAY
SW17:EDIT
SW18:UTIL
SW19:EFFECT
SW20:MODE
SW21EQ
SW22-30: SKHHPP (VN121700)
SW22:MUTE/SOLO
SW23:PART-
SW24:PART+
SW25:ENTER
SW26:SELECT<
SW27:SELECT>
SW28:EXIT
SW29:VALUE-
SW30:VALUE+
**19. DC-IN Connector**
JK 8: 16V DC 3A HEC23 (VJ207400)
DC IN
**20. Phone Jack**
JK 6: YKB26-52 (VT160000)
A/D INPUT 2
**21. DIN Connector**
JK 1: DIN 8P MD-S8 (VM761000)
TO HOST
JK 2,3: 3P YKF51-50 (VJ885500)
JK2:MIDI IN-A, MIDI IN-B
JK3:MIDI OUT, MIDI THRU
**22. Base Post Connector**
CN 15: XH 3P (LB918030)
to POWER Switch
**23. Connector Base Post**
CN 4: PH 4P (VB390000)
to PNJ-CN2
CN 8: PH- 3P TE (VB389900)
to PNJ-CN6
**24. Connector**
CN 3: 52147 15P (VF667600)
to PNJ-CN1
CN 5: SLW 16P TE (VS666700)
to DM-CN1
CN 9: 52147 17P (VF667700)
to PRSW CN11
**25. Cable Holder**
CN 111: 51048 17P (VI879500)
to DM-CN9
**26. IC Socket**
IC11: DICF-42CS-E (VK863100)
**27. Battery Holder**
BAT 1: CR2032 (VN103600)
**28. Holder, Jack**
40: (VV488200)
**29. Connector Assembly**
CN 1,2: 15P-210 ( -- )
50,60: 15P-210 ( -- )
**30. Heat Sink**
20: T220M 25L (BA808520)
**31. Bind Head Screw**
80: 3.0X6 MFZN2BL (EG330360)



Notes)
Circuit Board: PNJ (VZ037900) XS679D0
RE (VZ037800) XS679D0
**1. IC**
IC1: NJG710069 (XM326B00) DDE1
IC2: AN78L05-(TA) (XM927A00)
REGULATOR +5V
IC3,10: UPD63200GS (XM145A00)
D/A CONVERTER
IC4-7: UPC4570G2 (XF291A00) OP AMP
IC8: NJM4556AMT1 (XQ138A00) SOP
IC9: UPC24M09AHF: (XM968B00)
REGULATOR +9V
IC11: TC7W14F (XR338A00)
IC12: TE12L INVERTER
SN74HC74NSR (XC726A00) DFF
**2. Transistor**
Q 1-5: 2SC3326 A,B TE85 (VD303700)
Q 6: 2SA1162 O,Y (VJ927200)
**3. Diode**
D 1,2: MA221 (VB493900)
**4. Diode (chip)**
D 3: D1F60 (VS201100)
**5. Monolithic Ceramic Cap.**
C 2,3,5-7,16,18, 25,31,32,35,42, 51,65-68: F 0.100 25V Z (UB245100)
C 12,14,22,24,39, 41,48,50: B 6800P 50V K (UB013680)
C 13,23,40,49: B 270P 50V K (UB012270)
C 19,26,43,52: SL 100P 50V J (UB052100)
C 28,29,46,55,61, 62: B 2200P 50V K (UB013220)
C 56,59,60,64: B 1000P 50V K (UB013100)
C 70-72: F 0.100 25V Z (UB245100)
C 73: F 1.0 16V Z (VQ686200)
**6. Electrolytic Cap.**
C 1,4,8-10,34,36, 37: 47.00 16.0V (UJ837470)
C 11,21,38,47: 4.70 50.0V (UJ866470)
C 15,57: 100.00 16.0V (UJ838100)
C 17,20,27,44,53: 22.00 16.0V (UJ837220)
C 22: 1.00 50.0V (UJ866100)
C 33,45,54: 220.00 16.0V (UJ838220)
C 58: 10.00 16.0V (UJ837100)
**7. Chip Inductance**
L 1,3,5,7,9,10,12: 56U LEM2520 T 56 (VR243700)
**8. Solid Inductance (chip)**
L 15: BLM31A700SPT 70 (VL139800)
**9. Carbon Resistor (chip)**
L 2,4,6,8,11: 0.0 1/4 J (RD150000)
R 1,25: 4.7 1/4 J (RD153470)
R 2,17,28,40: 12.0K 0.1 J (RD257120)
R 3,4,7,15,16,19, 26,27,38,39: 3.8K 0.1 J (RD256680)
R 5,10,12,18,22, 24,29,33,37,41, 45,49,57,60: 1.0K 0.1 J (RD256100)
R 6: 470.0 1/4 J (RD155470)
R 8,20,31,43: 3.2K 0.1 J (RD256820)
R 9,21,32,44: 24.0K 0.1 J (RD257240)
R 11,14,23,30,35, 36,42,47,48: 10.0K 0.1 J (RD257100)
R 13: 1.5K 0.1 J (RD256150)
R 34,46: 47.0 1/4 J (RD154470)
R 50: 10.0 0.1 J (RD254100)
R 51: 150.0 0.1 J (RD255150)
R 52: 47.0K 0.1 J (RD257470)
R 53: 68.0 0.1 J (RD254680)
R 54,56,59: 100.0K 0.1 J (RD258100)
R 55,58: 22.0K 0.1 J (RD257220)
R 62: 0.0 0.0 J (RD250000)
**10. LC Filter**
EMI 1,3: LS MT Y223NB (FZ006970)
EMI 2: STF-104ZB-TBM (VR193800)
**11. Rotary Variable Resistor**
VR 1: RK09K12A0 (VV483200)
VOLUME
**12. Encoder**
VR 3: REB161 PVB 15F (VU481300)
Dial
**13. Phone Jack**
JK 1: YKB21-50 (VE382300)
A/D INPUT 1
JK 2: YKB26-52 (VT160000) PHONES
JK 3,4,7: YKB21-50 (VC587500)
JK3:OUTPUT L/MONO
JK4:OUTPUT R
JK7:INDIV.OUTPUT 2
JK 6: YKB21-50 (VB312600)
INDIV.OUTPUT 1
**14. Cable Holder**
CN 1: 51048 17P (VI879500)
to DM-CN3
CN 7: 51048 5P (VI878300)
to PNJ-CN4
**15. Wire Trap**
CN 4: 52147 5P (VK024900)
to RE-CN7
**16. Holder, Jack**
90: (VV916900)
**17. Connector Assembly**
CN 2,6: ( -- )
40,50,60: ( -- )
**18. Ferrite Core**
110: FR25/15/12-1400L (VC362700)
**19. Jumper Wire**
J 1-37: 0.55 (VA078900)
**20. Jack Angle**
80: (VF691900)
**21. Cord Holder**
100: BK-1 (CB069250)

# ■ MU100R OVERALL CIRCUIT DIAGRAM 1/2 (DM, PRSW)

DM

CONVERTER DC-DC

LINE TRANSCEIVER

MULTIPLEXER

LCD UNIT

LCD cable

INVERTER

Photo Coupler

RESET

IC16 HD6432655 CPU

ROM 16M

RAM 1M

DRAM - 4M

SWP 30 (QFP)

AD CONVERTER

AD FRONT END

D - FF

TRANSCEIVER

DEC

ANALOG SWITCH

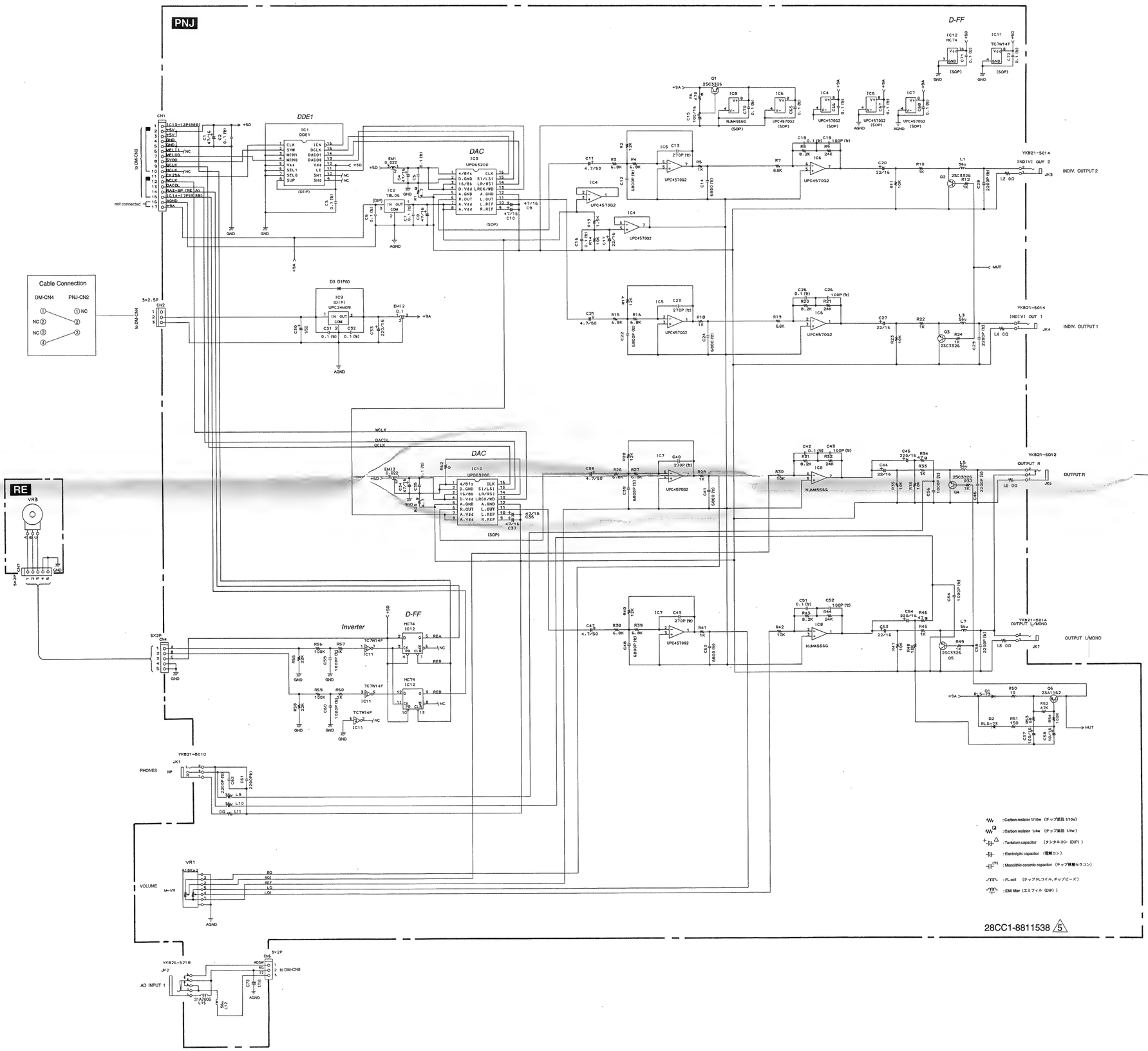
PRSW

28CA2-8811649 2

: Carbon resistor 1/10w （チップ抵抗 1/10w）
: Carbon resistor 1/4w （チップ抵抗 1/4w）
: Tantalum capacitor （タンタルコン (DIP) ）
: Electrolytic capacitor （電解コン）
: Monolithic ceramic capacitor （チップ積層セラコン）
: FL coil （チップ FLコイル, チップビーズ）
: EMI filter （エミフィル (DIP) ）

- MJM78L05UA (XJ598A00) REGULATOR +5V
  1: INPUT 2: COMMON 3: OUTPUT
- AN78L05 (XM927A00) REGULATOR +5V
  1: INPUT 2: COMMON 3: OUTPUT
- μPC2933T (XS516A00) REGULATOR +3.3V
- μPC2909T (XT441A00) REGULATOR +9V
  1: V in 2: GND 3: V out
- μPC24M09AHF (XM968B00) REGULATOR +9V
  1: INPUT 2: COMMON 3: OUTPUT
- SI-8050S (XT442A00) REGULATOR +5V
  1: V in 2: SW out 3: GND 4: V os 5: S.S
- D1F60 (VS201100) DIODE
  1: ANODE 2: CATHODE

# ■ MU100R OVERALL CIRCUIT DIAGRAM 2/2 (PNJ, RE)








**Notes)**
Circuit Board: DM (VZ019200) XT446C0
PRSW (VZ019100) XT446C0

**01. IC**
IC1: MC34051MEL (X7P881A00)
IC2,3: TC74HC14AF-T1 (XD667A00) SOP
IC4: SC7SU04FEL (X7348A00) INVERTER
IC5: M62021FP (X6868A00) RESET
IC6: TC74HC126AF (XS776A00) BUS BUFFER
IC7: TC7W14FU (XN383A00) INVERTER LINE TRANSCEIVE
IC8: UPC2930T (XT441A00) REGULATOR +9V
IC9: SI-8050S (XT444A00) REGULATOR +5V
IC10: UPC2933T (XS216A00) REGULATOR +3.3V
IC12: M5M51008BFP-70LL (XS681A00) SRAM
IC13: TC7S32F (XM548A00) OR
IC14: NJU7660M-T1 (XP556A00) CONVERTER DC-DC
IC15: TC74HC4051AF-T1 (XR056A00) MULTIPLEXER
IC16: HD6432653(16W) (XT443A00) CPU
IC17: M5M44260CTP-7 (XS438A00) 70NS 4M
IC18: TC203C760HF-001 (XR738A00) or TC203C760HF-002 (XS725A00) SWP30
IC20: NJM78L05UA (JS598A00) REGULATOR +5V
IC25-28: UPC4570G2 (XP291A00) OP AMP
IC29: TLC320AD58C (XS692A00) AD CONVERTER
IC30: TL32086 (XS893A00) AD FRONT END
IC31: TC74HC4066AF-T1 (XG385A00) ANALOG SWITCH
IC32: SN74HC273NSR (XM223A00) D-FF
IC33: TC74HC245F-T1 (XD603A00) TRANSCEIVER
IC34: KM23C32000AG-4J (XS518A00) MA ROM
IC35: KM23C32000AG-5J (XS743A00) MA ROM
IC36: 23C16000WGY928 (XT446A00) ROM1
IC37: 23C16000WGY929 (XT461A00) ROM2
IC38: MX23C3210TC-10 (XT462A00) ROM3
IC39: MX23C3210TC-10 (XT463A00) ROM4
IC40: HD74LVC139FP (XS048A00) DEC
IC41: TC7S66F (XR692A00) ANALOG SWITCH
70: 312V100 (XT714E00) EPROM

**02. Transistor**
Q 5,6: 2SCDTC143XK (VD456900)

**03. Diode**
D 3-5,13-24,30: MA221 (VB493000)
D 7,9,10: D1F60 (VS201100)
D 8,29: D3FP3 (VZ016900)
D 31: MA221 (VB493000)

**04. Zener Diode**
ZD 1: UDZ 3.6BTE-17 3. (VU171500)

**05. Photo Coupler**
PC 1,2: PC410T (VN693000)

**06. Quartz Crystal Unit**
X 1: 16M SMD-49 (VP864900)
IC19: DDC-49SS (VV345800)

**07. Monolithic Ceramic Cap.**
C 1,123,130: SL 100P 50V (UB052100)
C 2,4,7-9,14,17, 18,20,21,24,28, 31,32,55,36,40: F 0.100 25V Z (UB245100)
C 5,6,26,42-46, 64: F 0.010 50V Z (UB044100)
C 10: B 2200P 50V K (UB013220)
C 41,45,49,51,54, 57,59,60,62,65, 67,71,72,100: F 0.100 25V Z (UB245100)
C 52,53: SL 33P 50V J (UB051330)
C 106,107,124, 129: SL 47P 50V J (UB051470)
C 108,109,111 112,185-187, 192: F 1.0 16V Z (UQ686200)
C 110,133-135, 143,147,153, 158,161,162, 164: F 0.100 25V Z (UB245100)
C 122,128: B 470P 50V K (UB012470)
C 126,132: B 1200P 50V K (UB013120)
C 136,140: SL 180P 50V J (UB052180)
C 137,139: B 3300P 50V K (UB013330)
C 144,146,149, 151: B 220P 50V K (UB012220)
C 154-157: B 4700P 50V K (UB013470)
C 165,167,168, 170,172,177 182: F 0.100 25V Z (UB245100)
C 183,184,189: F 0.100 25V Z (UB245100)

**08. Electrolytic Cap.**
C 3,13,19,47,48, 50,55,56,58,83, 86,88,101,175: 10.00 16.0V (UJ537100)
C 15: 4.70 50.0V (UJ566470)
C 25,27: 470.00 25.0V (UJ848470)
C 29,152: 100.00 16.0V (UJ838100)
C 30: 100.00 25.0V (UJ848100)
C 33,159: 220.00 16.0V (UJ838220)
C 34,37,73,142, 145,148,150, 160,163: 47.00 16.0V (UJ537470)
C 38,39,138,141: 22.00 16.0V (UJ537220)
C 121,127: 0.22 50.0V (UJ565220)
C 125,131: 1.00 50.0V (UJ866100)

**09. Tantalum Cap.**
C 116: 4.70 16V M (TP736470)

**10. Coil**
L 74: 180UH (VZD17900)

**11. Chip Inductance**
L 9,10,12,13,15, 16,18,19,45,46, 49-50,73: 56U LEM2520 T 56 (VR243700)

**12. Solid Inductance (chip)**
L 1,2,5,6,8,11,14, 17,20,23-38,47, 51-67,71: BLM31A70SPST 70 (VL139800)

**13. Carbon Resistor (chip)**
L 3,4: 0.0 1/4 J (RD100000)
R 2,3,155,156: 56.0 1 J (RD256560)
R 4-6,9-11,24-26, 30-34,42,59: 10.0K 0.1 J (RD257100)
R 12,13,67,131, 138,170: 1.0K 0.1 J (RD256100)
R 14-19: 220.0 0.1 J (RD255200)
R 20,23,29: 0.0 0.0 J (RD200000)
R 27,81: 680.0 0.1 J (RD256800)
R 28: 680.0K 0.1 J (RD259880)
R 35-37,39-41,43, 44,48,56-58,74, 75,157: 100.0 0.1 J (RD255100)
R 38,45-47,49,51, 52,53,54,55: 47.0 0.1 J (RD254470)
R 60,77,108,136, 142,144,146, 147,148,166, 168: 10.0K 0.1 J (RD257100)
R 62: 2.4K 0.1 J (RD256240)
R 63,135,143: 3.3K 0.1 J (RD256330)
R 64: 3.6K 0.1 J (RD256360)
R 65: 3.0K 0.1 J (RD256300)
R 66: 1.6K 0.1 J (RD256160)
R 68,160-165: 470.0 0.1 J (RD255470)
R 69: 2.0K 0.1 J (RD256200)
R 70-73,110,150-153,158,159 171: 4.7K 0.1 J (RD256470)
R 76: 47.0K 0.1 J (RD257470)
R 78,79: 68.0 1/4 J (RD254680)
R 111: 22.0K 0.1 J (RD257220)
R 114,116: 47.0 1/4 J (RD254470)
R 115,117: 36.0K 0.1 J (RD257360)
R 118,119: 15.0K 0.1 J (RD257150)
R 130,132,134, 137,139,141, 146,149: 100.0K 0.1 J (RD258100)
R 133,140: 120.0K 0.1 J (RD258120)
R 169,176,177, 180,188,189 191: 10.0K 0.1 J (RD257100)
R 174,175: 68.0 0.1 J (RD254680)
R 186: 4.7K 0.1 J (RD256470)
R 192: 100.0 0.1 J (RD255100)

**14. Resistor Array**
RA 1: 180 (RE045180)
RA 2-11,14-20: 68 (RE044680)
RA 12,13,30-32: 100 (RE045100)
RA 21-29,33: 68 (RE044680)
RA 33,34,37,38: 10K (RE047100)
RA 35,36: 4.7K (RE046470)
RA 40-45: 22K (RE047220)

**15. LC Filter**
EMI 1-6,8: STF-104ZB-TBM (VR193800)
L 72: PLT2003C (VQ238200)

**16. Rotary Variable Resistor**
VR 1: RK09K12A06CA (VS668800) A/D INPUT 2 VOLUME

**17. Slide Switch**
SW31: SSSF144-S06N-0 (VQ665200) HOST SELECT

**18. Push Switch**
SW 16-21: SKHQFN GREEN (VK701100)
SW16:PLAY
SW17:EDIT
SW18:UTIL
SW19:EFFECT
SW20:MODE
SW21EQ
SW22-30: SKHHPF (VN121700)
SW22:MUTE/SOLO
SW23:PART-
SW24:PART+
SW25:ENTER
SW26:SELECT<
SW27:SELECT>
SW28:EXIT
SW29/VALUE-
SW30:VALUE+

**19. DC-IN Connector**
JK 8: 16V DC 3A HEC23 (VJ207400) DC IN

**20. Phone Jack**
JK 6: YKB26-52 (VT160000) A/D INPUT 2

**21. DIN Connector**
JK 1: DIN 8P MD-S8 (VM761000) TO HOST
JK 2,3: 3P YKF51-50 (VJ685500) JK2:MIDI IN-A, MIDI IN-B JK3:MIDI OUT, MIDI THRU

**22. Base Post Connector**
CN 16: XH 3P (LB918030) to POWER Switch

**23. Connector Base Post**
CN 4: PH 4P (VB390000) to PNJ-CN2
CN 8: PH- 3P TE (VB389900) to PNJ-CN6

**24. Connector**
CN 3: 52147 15P (VF667600) to PNJ-CN1
CN 5: SLW 16P TE (VS667700) to DM-CN1
CN 9: 52147 17P (VF667700) to PRSW CN11

**25. Cable Holder**
CN 11: 51048 17P (VI879500) to DM-CN9

**26. IC Socket**
IC11: DICF-42CS-E (VK863100)

**27. Battery Holder**
BAT 1: CR2032 (VN103600)

**28. Holder, Jack**
40: (VV488200)

**29. Connector Assembly**
CN 1,2: 15P-210 ( – )
50,60: 15P-210 ( – )

**30. Heat Sink**
20: T220M 25L (BA808520)

**31. Bind Head Screw**
80: 3.0X8 MFZN2BL (EG330360)

**Notes)**
Circuit Board: PNJ (VZ037900) XS679D0
RE (VZ037800) XS679D0

**1. IC**
IC1: JG710069 (0M326B00) DDE1
IC2: AN78L05-(TA) (0M927A00) REGULATOR +5V
IC3,10: UPD65200G3 (0K145A00) DA CONVERTER
IC4-7: UPC4570G2 (XP291A00) OP AMP
IC8: NJM4556AM1 (XD238A00) SOP
IC9: UPC24M09AHF: (0X966B00) REGULATOR +9V
IC11: TC7W14F (XR936A00) TE12L INVERTER
IC12: SN74HC74NSR (XC728A00) DFF

**2. Transistor**
Q 1-5: 2SC3326 A,B TE85 (VD303700)
Q 6: 2SA1162 O,Y (VJ872300)

**3. Diode**
D 1,2: MA221 (VB493900)

**4. Diode (chip)**
D 3: D1F60 (VS201100)

**5. Monolithic Ceramic Cap.**
C 2,3,5-7,16,18, 25,31,32,35,42, 51,65-68: F 0.100 25V Z (UB245100)
C 12,14,22,24,39, 41,48,50: B 6800P 50V K (UB013680)
C 13,23,40,49: B 270P 50V K (UB012270)
C 19,26,43,52: SL 100P 50V J (UB052100)
C 28,29,46,55,61, 62: B 2200P 50V K (UB013220)
C 56,59,60,64: B 1000P 50V K (UB013100)
C 70-72: F 0.100 25V Z (UB245100)
C 73: F 1.0 16V Z (VQ686200)

**6. Electrolytic Cap.**
C 1,4,8-10,34,36, 97: 47.00 16.0V (UJ837470)
C 11,21,38,47: 4.70 50.0V (UJ866470)
C 15,57: 100.00 16.0V (UJ838100)
C 17,20,27,44,53: 22.00 16.0V (UJ837220)
C 30: 1.00 50.0V (UJ866100)
C 33,45,54: 220.00 16.0V (UJ838220)
C 58: 10.00 16.0V (UJ837100)

**7. Chip Inductance**
L 1,3,5,7,9,10,12: 56U LEM2520 T 56 (VR243700)

**8. Solid Inductance (chip)**
L 15: BLM31A700SPT 70 (VL139800)

**9. Carbon Resistor (chip)**
L 2,4,6,8,11: 0.0 1/4 J (RD150000)
R 1,26: 4.7 1/4 J (RD153470)
R 2,17,28,40: 12.0K 0.1 J (RD257120)
R 3,4,7,15,16,19, 26,27,38,39: 6.8K 0.1 J (RD256680)
R 5,10,12,18,22, 24,29,33,37,41, 45,49,57,60: 1.0K 0.1 J (RD256100)
R 6: 470.0 1/4 J (RD155470)
R 8,20,31,43: 8.2K 0.1 J (RD256820)
R 9,21,32,44: 24.0K 0.1 J (RD257240)
R 11,14,23,30,35, 36,42,47,48: 10.0K 0.1 J (RD257100)
R 13: 1.8K 0.1 J (RD256150)
R 34,46: 47.0 1/4 J (RD154470)
R 50: 10.0 0.1 J (RD254100)
R 51: 100.0 0.1 J (RD255150)
R 52: 47.0K 0.1 J (RD257470)
R 53: 68.0 0.1 J (RD254680)
R 54,56,59: 100.0K 0.1 J (RD258100)
R 55,58: 22.0K 0.1 J (RD257220)
R 62: 0.0 0.0 J (RD250000)

**10. LC Filter**
EMI 1,3: LS MT Y223NB (FZ006970)
EMI 2: STF-104ZB-TBM (VR193800)

**11. Rotary Variable Resistor**
VR 1: RK09K12A0 (VV483200) VOLUME

**12. Encoder**
VR 3: REB161 PVB 15F (VU481300) Dial

**13. Phone Jack**
JK 1: YKB21-50 (VE382300) A/D INPUT 1
JK 2: YKB26-53 (VT160000) PHONES
JK 3,4,7: YKB21-50 (VC657500) JK3:OUTPUT L/MONO JK4:OUTPUT R JK7:INDIV.OUTPUT 2
JK 6: YKB21-50 (VB312900) INDIV.OUTPUT 1

**14. Cable Holder**
CN 1: 51048 17P (VI879500) to DM-CN3
CN 7: 51048 5P (VI878300) to PNJ-CN4

**15. Wire Trap**
CN 4: 52147 5P (VK024900) to RE-CN7

**16. Holder, Jack**
90: (VV916900)

**17. Connector Assembly**
CN 2,6: ( – )
40,50,60: ( – )

**18. Ferrite Core**
110: FR25/15/12-1400L (VC362700)

**19. Jumper Wire**
J 1-37: 0.55 (VA078900)

**20. Jack Angle**
80: (VF891900)

**21. Cord Holder**
100: BK-1 (CB069250)

# TONE GENERATOR

# MU100R

# PARTS LIST

■ **CONTENTS**（目次）

OVERALL ASSEMBLY（総組立） ..... 1
ELECTRICAL PARTS（電気部品） ..... 4〜7

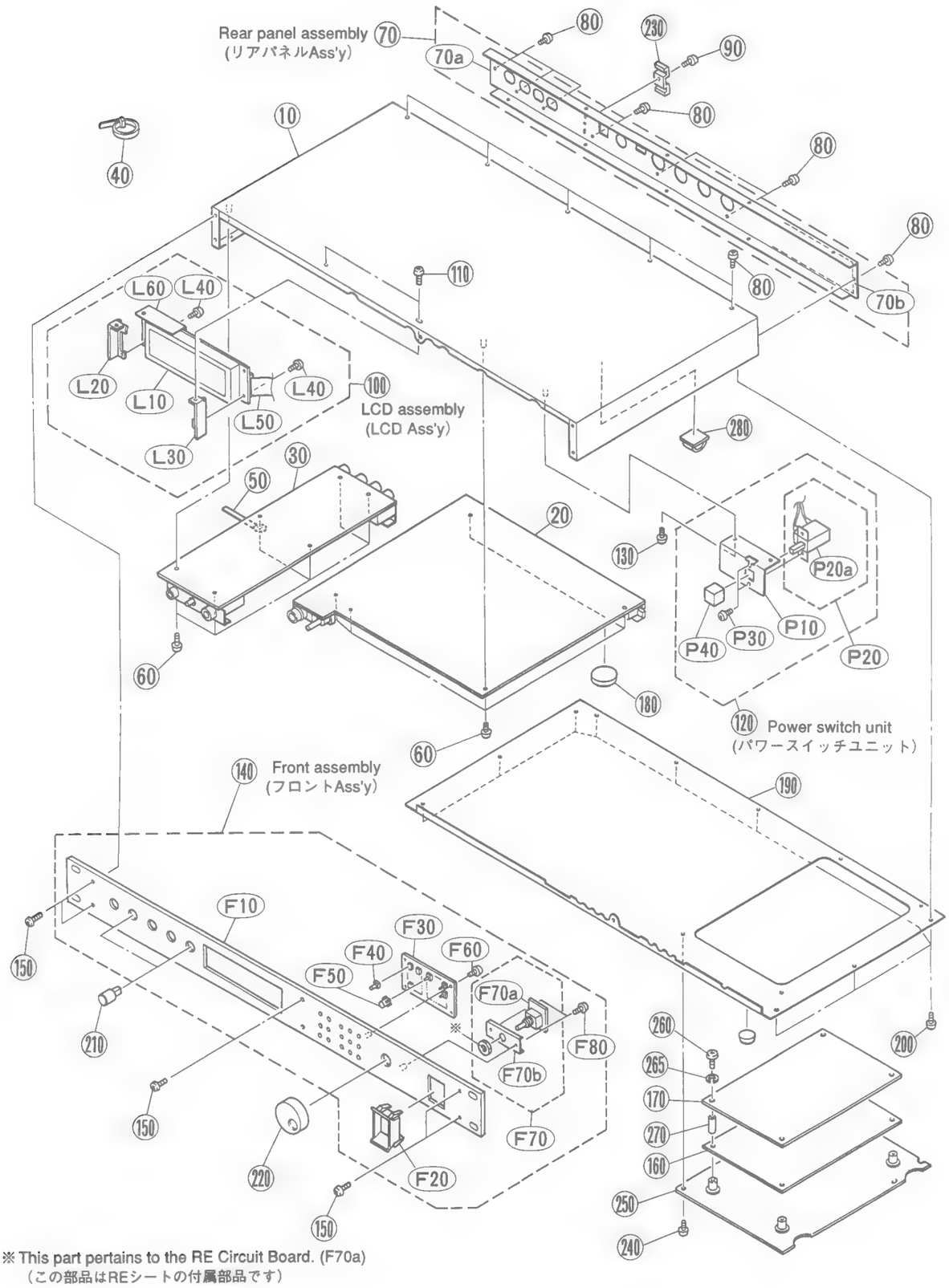
Note) DESTINATION ABBREVIATIONS

| | |
|---|---|
| J : Japanese model | A : Australian model |
| U : U.S.A. model | E : European model |
| C : Canadian model | D : German model |
| X : General model | B : British model |
| M : South African model | I : Indonesian model |
| H : North European model | O : Chinese model |

・The numbers in "QTY" shows quantities for each unit.
・The parts with "--" in "Parts No." are not available as spare parts.

・部品価格ランクは、変更になることがあります。
・QTY 欄に記されている数字は、各ユニット当たりの使用個数です
・部品 No.が "--" の部品は、サービス用部品として準備されていません。

# ■ OVERALL ASSEMBLY (総組立)




※ This part pertains to the RE Circuit Board. (F70a)
（この部品はREシートの付属部品です）

| | REF NO. | PART NO. | DESCRIPTION | | 部品名 | REMARKS | QTY | ランク |
|---|---|---|---|---|---|---|---|---|
| | | | OVERALL ASSEMBLY | | 総組立 | MU100R J,U,E,W | | |
| ‡ | 10 | VZ038700 | Top Cover | | トップカバー印刷品 | | | |
| ‡ | 20 | VZ019200 | Circuit Board | DM | DMシート | | | |
| ‡ | 30 | VZ037900 | Circuit Board | PNJ | PNJシート | | | |
| | 40 | -- | Cord Holder | BK-1 | インシュロックタイ | (CB06925) | | 01 |
| | 50 | CB502030 | Cord Binder | S-75B | 束線止め | | | 01 |
| | 60 | EP600230 | Bind Head Tapping Screw-B | 3.0X6 MFZN2BL | +バインドBタイト | | 11 | 01 |
| | 70 | -- | Rear Panel Assembly | | リアパネルAss'y | (VV97850) | | 08 |
| ‡ | 70a | VV979700 | Rear Panel | | リアパネル | | | |
| ‡ | 70b | VV979800 | Rear Panel Sheet | | リアパネルシート印刷品 | | | |
| | 80 | EP600230 | Bind Head Tapping Screw-B | 3.0X6 MFZN2BL | +バインドBタイト | | 10 | 01 |
| | 90 | EP600190 | Bind Head Tapping Screw-B | 3.0X8 MFZN2BL | +バインドBタイト | | 3 | 01 |
| | 100 | -- | LCD Assembly | | LCD Ass'y | (VZ39490) | | |
| | 110 | EP600230 | Bind Head Tapping Screw-B | 3.0X6 MFZN2BL | +バインドBタイト | | 2 | 01 |
| | 120 | -- | Push Switch Unit | | PSWユニット | (VZ03880) | | |
| | 130 | EP600230 | Bind Head Tapping Screw-B | 3.0X6 MFZN2BL | +バインドBタイト | | 2 | 01 |
| | 140 | -- | Front Assembly | | フロントAss'y | U,E,W (VZ51340) | | |
| | 140 | -- | Front Assembly | | フロントAss'y | J (VZ03890) | | |
| | 150 | EP600230 | Bind Head Tapping Screw-B | 3.0X6 MFZN2BL | +バインドBタイト | | 5 | 01 |
| ‡ | 160 | VZ025000 | Circuit Board | P-VL | P-VLシート | U,E,W | | |
| ‡ | 170 | VZ024700 | Circuit Board | P-VH | P-VHシート | U,E,W | | |
| | 180 | VN103500 | Lithium Battery | CR2032 | リチウム電池 | | | 03 |
| | 190 | -- | Bottom Assembly | | ボトムAss'y | (VZ03900) | | |
| | 200 | EP600230 | Bind Head Tapping Screw-B | 3.0X6 MFZN2BL | +バインドBタイト | | 10 | 01 |
| | 210 | VM825600 | Input Knob | | インプットツマミB | VOLUME | 2 | 03 |
| | 220 | VS052100 | Encoder Knob | | エンコーダーツマミ | Dial | | 04 |
| | 230 | VC407100 | Cord Column | | DCコードコラム | | | 02 |
| | 240 | EG330370 | Bind Head Screw | 3.0X6 MFNI33 | +バインド小ネジ | | 4 | 01 |
| ‡ | 250 | VZ317600 | DB Cover | | DB蓋メッキ上がり | J | | |
| ‡ | 250 | VZ429300 | DB Cover | | DB蓋メッキ上がり | U,E,W | | |
| ‡ | 260 | VJ999700 | Bind Head Tapping Screw-C | 3.0X20 MFZN2BL | +バインドBタイト | | 4 | |
| ‡ | 265 | | Spring Washer | #2 3.0 MFZN2Y | バネ座金 | J | 4 | |
| ‡ | 270 | VZ038600 | Spacer | | スペーサー | | 4 | |
| | 280 | CB825280 | Clamp | CKN-05 | CKNクランプ | | 2 | 01 |
| | | -- | LCD Assembly | | LCD Ass'y | (VZ39490) | | |
| | L10 | VS609700 | LCD | DM113Z-5BL3 | 液晶ディスプレイ | | | 19 |
| | L20 | VV979400 | LCD Angle L | | LCDアングルL | | | 03 |
| | L30 | VV979500 | LCD Angle R | | LCDアングルR | | | 03 |
| | L40 | EP600230 | Bind Head Tapping Screw-B | 3.0X6 MFZN2BL | +バインドBタイト | | 2 | 01 |
| | L50 | VT020800 | LCD Cable | BNCD-P=1-L-16-250 | LCDケーブル | | | 03 |
| ‡ | L60 | VZ512500 | LCD Shield Sheet | | LCDシールドシート | | | |
| | | -- | Push Switch Unit | | PSWユニット | (VZ03880) | | |
| | P10 | VV979600 | Holder, Power Switch | | PSWアングル | | | 04 |
| | P20 | -- | Power Switch Assembly | | PSW束線 | (VZ01800) | | |
| | P20a | VP691000 | Push Switch | SDDLB1 | プッシュSW | POWER | | 03 |
| | P30 | EG330360 | Bind Head Screw | 3.0X6 MFZN2BL | +バインド小ネジ | | 2 | 01 |
| | P40 | VL812900 | Power Switch Knob | EMP700 | PSWノブ | POWER | | 03 |
| | | -- | Front Assembly | | フロントAss'y | J (VZ03890) | | |
| | | -- | Front Assembly | | フロントAss'y | U,E,W (VZ51340) | | |
| ‡ | F10 | VZ039600 | Front Panel | | フロントパネル印刷品 | J | | |
| ‡ | F10 | VZ513300 | Front Panel | | フロントパネル印刷品 | U,E,W | | |
| | F20 | VL813000 | Escutcheon, Power Switch | | PSWエスカッション | | | 03 |
| ‡ | F30 | VZ019100 | Circuit Board | PRSW | PRSWシート | | | |
| | F40 | VM825700 | Mode Button | | モードボタン | PLAY,EDIT,UTIL,EFFECT, MODE,EQ | 6 | 03 |
| ‡ | F50 | VZ330900 | OP Button | | OPボタン | MUTE/SOLO,PARY(-,+),ENTER SELECT(<,>),EXIT, VALUE(-,+) | 9 | |
| | F60 | EP600230 | Bind Head Tapping Screw-B | 3.0X6 MFZN2BL | +バインドBタイト | | 4 | 01 |
| | F70 | -- | Encoder Assembly | | エンコーダAss'y | (VZ03970) | | |
| ‡ | F70a | VZ037800 | Circuit Board | RE | RESシート | | | |
| ‡ | F70b | VY794600 | Encoder Angle | | エンコーダアングル | | | |
| | F80 | EP600230 | Bind Head Tapping Screw-B | 3.0X6 MFZN2BL | +バインドBタイト | | 2 | 01 |
| | | -- | Bottom Assembly | | ボトムAss'y | (VZ03900) | | |
| ‡ | B10 | VZ040100 | Bottom Cover | | ボトムカバープレス品 | | | |
| | B20 | CB037120 | Foot | | スベリ座 | | 4 | 03 |

‡ New Parts（新規部品）

ランク：Japan only

| | REF NO. | PART NO. | DESCRIPTION | | 部品名 | REMARKS | QTY | ランク |
|---|---|---|---|---|---|---|---|---|
| | B30 | CB550900 | Adhesive Tape | 570F 30M W=10 | 粘着テープ | | | 08 |
| | | | ACCESSORY | | 付属品 | | | |
| | 20 | -- | AC Adapter | PA-5B | ACアダプター | J (VS27610) | | 11 |
| | 20 | -- | AC Adapter | PA-5B UC | ACアダプター | U (VS35320) | | 11 |
| | 20 | -- | AC Adapter | PA-5B CEE | ACアダプター | E (VS35330) | | 12 |
| ‡ | 140 | XT644B00 | Magneto Optical Disk | | 光ディスク | J | | |
| ‡ | 140 | XT458A00 | Floppy Disk | | フロッピーディスク | U,E,W | | |
| | | | OPTION | | 別売品 | | | |
| ‡ | | VZ025000 | Circuit Board | P-VL | P-VLシート | J | | |
| ‡ | | VZ040700 | Circuit Board | P-SG | P-SGシート | | | |
| ‡ | | VZ024700 | Circuit Board | P-VH | P-VHシート | J | | |

‡ New Parts（新規部品）

ランク：Japan only

# ■ ELECTRICAL PARTS (電気部品)

| | REF NO. | PART NO. | DESCRIPTION | | 部品名 | REMARKS | QTY | ランク |
|---|---|---|---|---|---|---|---|---|
| | | | ELECTRICAL PARTS | | 電気部品 | MU100R J,U,E,W | | |
| * | | VZ019200 | Circuit Board | DM | DMシート | (XT446C0) | | |
| * | | VZ019100 | Circuit Board | PRSW | PRSWシート | (XT446C0) | | |
| * | | VZ037900 | Circuit Board | PNJ | PNJシート | (XS679D0) | | |
| * | | VZ037800 | Circuit Board | RE | REシート | (XS679D0) | | |
| * | | VZ025000 | Circuit Board | P-VL | P-VLシート | U,E,W (XT416B0) | | |
| * | | VZ024700 | Circuit Board | P-VH | P-VHシート | U,E,W (XT415B0) | | |
| | | | | | | | | |
| * | | VZ019200 | Circuit Board | DM | DMシート | (XT446C0) | | |
| * | | VZ019100 | Circuit Board | PRSW | PRSWシート | (XT446C0) | | |
| | | EG330360 | Bind Head Screw | 3.0X6 MFZN2BL | +バインド小ネジ | | | 01 |
| | | UB012220 | Monolithic Ceramic Cap. | B 220P 50V K | チップ積層セラコン | | | 01 |
| | | UB012470 | Monolithic Ceramic Cap. | B 470P 50V K | チップ積層セラコン | | | 01 |
| | | UB013120 | Monolithic Ceramic Cap. | B 1200P 50V K | チップ積層セラコン | | | 01 |
| | | UB013220 | Monolithic Ceramic Cap. | B 2200P 50V K | チップ積層セラコン | | | 01 |
| | | UB013330 | Monolithic Ceramic Cap. | B 3300P 50V K | チップ積層セラコン | | | 01 |
| | | UB013470 | Monolithic Ceramic Cap. | B 4700P 50V K | チップ積層セラコン | | | 01 |
| | | UB051330 | Monolithic Ceramic Cap. | SL 33P 50V J | チップ積層セラコン | | | 01 |
| | | UB051470 | Monolithic Ceramic Cap. | SL 47P 50V J | チップ積層セラコン | | | 01 |
| | | UB052100 | Monolithic Ceramic Cap. | SL 100P 50V J | チップ積層セラコン | | | 01 |
| | | UB052180 | Monolithic Ceramic Cap. | SL 180P 50V J | チップ積層セラコン | | | 01 |
| | | UB044100 | Monolithic Ceramic Cap. | F 0.010 50V Z | チップ積層セラコン | | | 01 |
| | | UB245100 | Monolithic Ceramic Cap. | F 0.100 25V Z | チップ積層セラコン | | | 01 |
| | | VQ686200 | Monolithic Ceramic Cap. | F 1.0 16V Z | チップ積層セラコン | | | 01 |
| | | UI537100 | Electrolytic Cap. | 10.00 16.0V | ケミコン | | | 01 |
| | | UI537220 | Electrolytic Cap. | 22.00 16.0V | ケミコン | | | 01 |
| | | UI537470 | Electrolytic Cap. | 47.00 16.0V | ケミコン | | | 01 |
| | | UI565220 | Electrolytic Cap. | 0.22 50.0V | ケミコン | | | 01 |
| | | UI566470 | Electrolytic Cap. | 4.70 50.0V | ケミコン | | | 01 |
| | | UJ838100 | Electrolytic Cap. | 100.00 16.0V | ケミコン | | | 01 |
| | | UJ838220 | Electrolytic Cap. | 220.00 16.0V | ケミコン | | | 01 |
| | | UJ848100 | Electrolytic Cap. | 100.00 25.0V | ケミコン | | | 01 |
| | | UJ848470 | Electrolytic Cap. | 470.00 25.0V | ケミコン | | | 01 |
| | | UJ866100 | Electrolytic Cap. | 1.00 50.0V | ケミコン | | | 01 |
| | | FP736470 | Tantalum Cap. | 4.70 16V M | タンタルコン | | | 01 |
| * | | VZ017900 | Coil | 180UH | コイル | | | |
| | | VR243700 | Chip Inductance | 56U LEM2520 T 560J | 巻線チップインダクタ | | | 01 |
| | | VL139800 | Solid Inductance (chip) | BLM31A700SPT 70 | チップソリッドインダクタ | | | 01 |
| | | RD150000 | Carbon Resistor (chip) | 0.0 1/4 J | チップ抵抗 | | | |
| | | RD154470 | Carbon Resistor (chip) | 47.0 1/4 J | チップ抵抗 | | | |
| | | RD154680 | Carbon Resistor (chip) | 68.0 1/4 J | チップ抵抗 | | | 01 |
| | | RD250000 | Carbon Resistor (chip) | 0.0 0.0 J | チップ抵抗 | | | 01 |
| | | RD254470 | Carbon Resistor (chip) | 47.0 0.1 J | チップ抵抗 | | | 01 |
| | | RD254560 | Carbon Resistor (chip) | 56.0 0.1 J | チップ抵抗 | | | 01 |
| | | RD254680 | Carbon Resistor (chip) | 68.0 0.1 J | チップ抵抗 | | | 01 |
| | | RD255100 | Carbon Resistor (chip) | 100.0 0.1 J | チップ抵抗 | | | 01 |
| | | RD255220 | Carbon Resistor (chip) | 220.0 0.1 J | チップ抵抗 | | | 01 |
| | | RD255470 | Carbon Resistor (chip) | 470.0 0.1 J | チップ抵抗 | | | 01 |
| | | RD255680 | Carbon Resistor (chip) | 680.0 0.1 J | チップ抵抗 | | | 01 |
| | | RD256100 | Carbon Resistor (chip) | 1.0K 0.1 J | チップ抵抗 | | | 01 |
| | | RD256160 | Carbon Resistor (chip) | 1.6K 0.1 J | チップ抵抗 | | | 01 |
| | | RD256200 | Carbon Resistor (chip) | 2.0K 0.1 J | チップ抵抗 | | | 01 |
| | | RD256240 | Carbon Resistor (chip) | 2.4K 0.1 J | チップ抵抗 | | | 01 |
| | | RD256300 | Carbon Resistor (chip) | 3.0K 0.1 J | チップ抵抗 | | | 01 |
| | | RD256330 | Carbon Resistor (chip) | 3.3K 0.1 J | チップ抵抗 | | | 01 |
| | | RD256360 | Carbon Resistor (chip) | 3.6K 0.1 J | チップ抵抗 | | | 01 |
| | | RD256470 | Carbon Resistor (chip) | 4.7K 0.1 J | チップ抵抗 | | | 01 |
| | | RD257100 | Carbon Resistor (chip) | 10.0K 0.1 J | チップ抵抗 | | | 01 |
| | | RD257150 | Carbon Resistor (chip) | 15.0K 0.1 J | チップ抵抗 | | | 01 |
| | | RD257220 | Carbon Resistor (chip) | 22.0K 0.1 J | チップ抵抗 | | | 01 |
| | | RD257360 | Carbon Resistor (chip) | 36.0K 0.1 J | チップ抵抗 | | | 01 |
| | | RD257470 | Carbon Resistor (chip) | 47.0K 0.1 J | チップ抵抗 | | | 01 |
| | | RD258100 | Carbon Resistor (chip) | 100.0K 0.1 J | チップ抵抗 | | | 01 |
| | | RD258120 | Carbon Resistor (chip) | 120.0K 0.1 J | チップ抵抗 | | | 01 |
| | | RD258680 | Carbon Resistor (chip) | 680.0K 0.1 J | チップ抵抗 | | | 01 |
| | | RE044680 | Resistor Array | 68X4 | 抵抗アレイ | | | 01 |
| | | RE045100 | Resistor Array | 100X4 | 抵抗アレイ | | | 01 |
| * | | RE045180 | Resistor Array | 180X4 | 抵抗アレイ | | | |
| | | RE046470 | Resistor Array | 4.7KX4 | 抵抗アレイ | | | 01 |
| | | RE047100 | Resistor Array | 10KX4 | 抵抗アレイ | | | 01 |

* New Parts (新規部品)

ランク：Japan only

| REF NO. | PART NO. | DESCRIPTION | | 部品名 | REMARKS | QTY | ランク |
|---|---|---|---|---|---|---|---|
| | RE047220 | Resistor Array | 22KX4 | 抵抗アレイ | | | 01 |
| | XF291A00 | IC | UPC4570G2 | IC | OP AMP | | 03 |
| * | XS893A00 | IC | TL32088 | IC | AD FRONT END | | |
| | XJ598A00 | IC | NJM78L05UA | IC | REGULATOR +5V | | 02 |
| | XS516A00 | IC | UPC2933T | IC | REGULATOR +3.3V | | 03 |
| * | XT441A00 | IC | UPC2909T | IC | REGULATOR +9V | | |
| * | XT442A00 | IC | SI-8050S | IC | REGULATOR +5V | | |
| | XP596A00 | IC | NJU7660M-T1 | IC | CONVERTER DC-DC | | 05 |
| | XD603A00 | IC | TC74HC245F-T1 | IC | TRANSCEIVER | | 04 |
| | XD657A00 | IC | TC74HC14AF-TP1 | IC | SOP | | 02 |
| | XG385A00 | IC | TC74HC4066AF-T1 | IC | ANALOG SWITCH | | 02 |
| | XH223A00 | IC | SN74HC273NSR | IC | D-FF | | 01 |
| | XI348A00 | IC | SC7SU04FEL | IC | INVERTER | | 01 |
| | XM588A00 | IC | TC7S32F | IC | OR | | 01 |
| | XN883A00 | IC | TC7W14FU | IC | INVERTER | | 02 |
| | XP881A00 | IC | MC34051MEL | IC | LINE TRANSCEIVER | | 05 |
| | XR056A00 | IC | TC74HC4051AF-TP | IC | MULTIPLEXER | | 02 |
| | XR682A00 | IC | TC7S66F | IC | ANALOG SWITCH | | 01 |
| | XS048A00 | IC | HD74LVC139FP | IC | DEC | | 03 |
| | XS776A00 | IC | TC74HC126AF | IC | BUS BUFFER | | 02 |
| | XR738A00 | IC | TC203C760HF-001 | IC | SWP30 | | 20 |
| | XS725A00 | IC | TC203C760HF-002 | IC | SWP30 | | 19 |
| * | XT443A00 | IC | HD6432653(16M) | IC | CPU | | |
| | XS438A00 | IC | M5M44260CTP-7 | IC | 70NS 4M | | 16 |
| | XS518A00 | IC | KM23C32000AG-4J | IC | MA ROM | | 13 |
| | XS681A00 | IC | M5M51008BFP-70LLT | IC | SRAM | | 11 |
| | XS743A00 | IC | KM23C32000AG-5J | IC | MA ROM | | 13 |
| * | XT445A00 | IC | 23C16000WGY828 | IC | ROM | | |
| * | XT461A00 | IC | 23C16000WGY829 | IC | ROM | | |
| * | XT714E00 | IC | 312V100 | IC | EPROM | | |
| | XI686A00 | IC | M62021FP | IC | RESET | | 04 |
| * | XS892A00 | IC | TLC320AD58C | IC | AD CONVERTER | | |
| | LB918030 | Base Post Connector | XH 3P TE | ベースツキポスト | | | 01 |
| | VB389900 | Connector Base Post | PH- 3P TE | コネクタベースポスト | | | 01 |
| | VB390000 | Connector Base Post | PH 4P TE | コネクタベースポスト | | | 01 |
| | VF667600 | Connector | 52147 15P TE | コネクタ | | | 01 |
| | VF667700 | Connector | 52147 17P TE | コネクタ | | | 01 |
| | VI879500 | Cable Holder | 51048 17P TE | ケーブルホルダー | | | 01 |
| | VS666700 | Connector | SLW 16P TE | コネクタ | | | 02 |
| | VK863100 | IC Socket | DICF-42CS-E | ICソケット | | | 03 |
| | VN103600 | Battery Holder | CR2032 | バッテリーホルダー | | | 03 |
| | VG238200 | LC Filter | PLT2003C | LCフィルターEMI | | | 04 |
| | VR193800 | LC Filter | STF-104ZB-TBM | LCフィルターEMI | | | 01 |
| | VP864900 | Quartz Crystal Unit | 16M SMD-49 | 水晶振動子 | | | 04 |
| | VV345500 | Quartz Crystal Unit | DOC-49S5 | 水晶発振器 | | | 05 |
| | VD456900 | Transistor | 2SCDTC143XK | トランジスタ | | | 01 |
| | VB493900 | Diode | MA221 | ダイオード | | | 01 |
| | VS201100 | Diode | D1F60 | ダイオード | | | 01 |
| * | VZ016600 | Diode | D3FP3 | ダイオード | | | |
| | VU171500 | Zener Diode | UDZ 3.6BTE-17 3.6V | ツェナーダイオード | | | 01 |
| | VN686000 | Photo Coupler | PC410T | フォトカプラ | | | 04 |
| | VV488200 | Holder, Jack | | JKアングル | | | 03 |
| | -- | Connector Assembly | 15P-210 | PSR2束線 | (VZ31070) | | |
| | -- | Connector Assembly | 10P | SW1束線 | (VZ02020) | | |
| | -- | Connector Assembly | 7P | SW2束線 | (VZ02070) | | |
| | -- | Connector Assembly | 15P-210 | XWPS束線 | (VZ03760) | | |
| | BA808520 | Heat Sink | T220M 25L | ヒートシンク | | | 03 |
| JK1 | VM761000 | DIN Connector | DIN 8P MD-S810 | 複合コネクタ | TO HOST | | 03 |
| JK2 | VJ885500 | DIN Connector | 3P YKF51-5054 | DINコネクタ | MIDI IN(A,B) | | 04 |
| JK3 | VJ885500 | DIN Connector | 3P YKF51-5054 | DINコネクタ | MIDI (OUT,THRU) | | 04 |
| JK6 | VT160000 | Phone Jack | YKB26-5218 | ホーンジャック | A/D INPUT 2 | | 05 |
| JK8 | VJ207400 | DC-IN Connector | 16V DC 3A HEC2305 | DCジャック | DC IN | | 01 |
| VR1 | VS666800 | Rotary Variable Resistor | RK09K12A0A6CA | 二連ロータリーVR | A/D INPUT VOLUME | | 03 |
| SW16 | VK701100 | Push Switch | SKHQFN GREEN | プッシュSW | PLAY | | 02 |
| SW17 | VK701100 | Push Switch | SKHQFN GREEN | プッシュSW | EDIT | | 02 |
| SW18 | VK701100 | Push Switch | SKHQFN GREEN | プッシュSW | UTIL | | 02 |
| SW19 | VK701100 | Push Switch | SKHQFN GREEN | プッシュSW | EFFECT | | 02 |
| SW20 | VK701100 | Push Switch | SKHQFN GREEN | プッシュSW | MODE | | 02 |
| SW21 | VK701100 | Push Switch | SKHQFN GREEN | プッシュSW | EQ | | 02 |
| SW22 | VN121700 | Push Switch | SKHHPP | プッシュSW | MUTE/SOLO | | 01 |

* New Parts（新規部品）

ランク：Japan only

| REF NO. | PART NO. | DESCRIPTION | | 部品名 | REMARKS | QTY | ランク |
|---|---|---|---|---|---|---|---|
| SW23 | VN121700 | Push Switch | SKHHPP | プッシュSW | PLAY - | | 01 |
| SW24 | VN121700 | Push Switch | SKHHPP | プッシュSW | PLAY + | | 01 |
| SW25 | VN121700 | Push Switch | SKHHPP | プッシュSW | ENTER | | 01 |
| SW26 | VN121700 | Push Switch | SKHHPP | プッシュSW | SELECT < | | 01 |
| SW27 | VN121700 | Push Switch | SKHHPP | プッシュSW | SELECT > | | 01 |
| SW28 | VN121700 | Push Switch | SKHHPP | プッシュSW | EXIT | | 01 |
| SW29 | VN121700 | Push Switch | SKHHPP | プッシュSW | VALUE - | | 01 |
| SW30 | VN121700 | Push Switch | SKHHPP | プッシュSW | VALUE + | | 01 |
| SW31 | VQ665200 | Slide Switch | SSSF144-S06N-0 | スライドSW | HOST SELECT | | 03 |
| | | | | | | | |
| ‡ | VZ037900 | Circuit Board | PNJ | PNJシート | (XS679D0) | | |
| ‡ | VZ037800 | Circuit Board | RE | REシート | (XS679D0) | | |
| | CB069250 | Cord Holder | BK-1 | インシュロックタイ | | | 01 |
| | UB012270 | Monolithic Ceramic Cap. | B 270P 50V K | チップ積層セラコン | | | 01 |
| | UB013100 | Monolithic Ceramic Cap. | B 1000P 50V K | チップ積層セラコン | | | 01 |
| | UB013220 | Monolithic Ceramic Cap. | B 2200P 50V K | チップ積層セラコン | | | 01 |
| | UB013680 | Monolithic Ceramic Cap. | B 6800P 50V K | チップ積層セラコン | | | 01 |
| | UB052100 | Monolithic Ceramic Cap. | SL 100P 50V J | チップ積層セラコン | | | 01 |
| | UB245100 | Monolithic Ceramic Cap. | F 0.100 25V Z | チップ積層セラコン | | | 01 |
| | VQ686200 | Monolithic Ceramic Cap. | F 1.0 16V Z | チップ積層セラコン | | | 01 |
| | UJ837100 | Electrolytic Cap. | 10.00 16.0V | ケミコン | | | 01 |
| | UJ837220 | Electrolytic Cap. | 22.00 16.0V | ケミコン | | | 01 |
| | UJ837470 | Electrolytic Cap. | 47.00 16.0V | ケミコン | | | 01 |
| | UJ838100 | Electrolytic Cap. | 100.00 16.0V | ケミコン | | | 01 |
| | UJ838220 | Electrolytic Cap. | 220.00 16.0V | ケミコン | | | 01 |
| | UJ866100 | Electrolytic Cap. | 1.00 50.0V | ケミコン | | | 01 |
| | UJ866470 | Electrolytic Cap. | 4.70 50.0V | ケミコン | | | 01 |
| | VR243700 | Chip Inductance | 56U LEM2520 T 560J | 巻線チップインダクタ | | | 01 |
| | VC362700 | Ferrite Core | FR25/15/12-1400L | フェライトコア | | | 04 |
| | VL139800 | Solid Inductance (chip) | BLM31A700SPT 70 | チップソリッドインダクタ | | | 01 |
| | RD150000 | Carbon Resistor (chip) | 0.0 1/4 J | チップ抵抗 | | | |
| | RD153470 | Carbon Resistor (chip) | 4.7 1/4 J | チップ抵抗 | | | 01 |
| | RD154470 | Carbon Resistor (chip) | 47.0 1/4 J | チップ抵抗 | | | |
| | RD155470 | Carbon Resistor (chip) | 470.0 1/4 J | チップ抵抗 | | | |
| | RD250000 | Carbon Resistor (chip) | 0.0 0.0 J | チップ抵抗 | | | 01 |
| | RD254100 | Carbon Resistor (chip) | 10.0 0.1 J | チップ抵抗 | | | 01 |
| | RD254680 | Carbon Resistor (chip) | 68.0 0.1 J | チップ抵抗 | | | 01 |
| | RD255150 | Carbon Resistor (chip) | 150.0 0.1 J | チップ抵抗 | | | 01 |
| | RD256100 | Carbon Resistor (chip) | 1.0K 0.1 J | チップ抵抗 | | | 01 |
| | RD256150 | Carbon Resistor (chip) | 1.5K 0.1 J | チップ抵抗 | | | 01 |
| | RD256680 | Carbon Resistor (chip) | 6.8K 0.1 J | チップ抵抗 | | | 01 |
| | RD256820 | Carbon Resistor (chip) | 8.2K 0.1 J | チップ抵抗 | | | 01 |
| | RD257100 | Carbon Resistor (chip) | 10.0K 0.1 J | チップ抵抗 | | | 01 |
| | RD257120 | Carbon Resistor (chip) | 12.0K 0.1 J | チップ抵抗 | | | 01 |
| | RD257220 | Carbon Resistor (chip) | 22.0K 0.1 J | チップ抵抗 | | | 01 |
| | RD257240 | Carbon Resistor (chip) | 24.0K 0.1 J | チップ抵抗 | | | 01 |
| | RD257470 | Carbon Resistor (chip) | 47.0K 0.1 J | チップ抵抗 | | | 01 |
| | RD258100 | Carbon Resistor (chip) | 100.0K 0.1 J | チップ抵抗 | | | 01 |
| | XF291A00 | IC | UPC4570G2 | IC | OP AMP | | 03 |
| | XQ138A00 | IC | NJM4556AMT1 | IC | SOP | | 03 |
| | XM927A00 | IC | AN78L05-(TA) | IC | REGULATOR +5V | | 01 |
| | XM968B00 | IC | UPC24M09AHF: | IC | REGULATOR +9V | | 03 |
| | XC726A00 | IC | SN74HC74NSR | IC | DFF | | 01 |
| | XR336A00 | IC | TC7W14F | IC | TE12L INVERTER | | 02 |
| | XM145A00 | IC | UPD63200GS | IC | DA CONVERTER | | 07 |
| | XM326B00 | IC | JG710069 | IC | DDE1 | | |
| | VI878300 | Cable Holder | 51048 5P TE | ケーブルホルダー | | | 01 |
| | VI879500 | Cable Holder | 51048 17P TE | ケーブルホルダー | | | 01 |
| | VK024900 | Wire Trap | 52147 5P TE | ワイヤートラップ | | | 01 |
| | FZ006970 | LC Filter | LS MT Y223NB | LCフィルターEMI | | | 02 |
| | VR193800 | LC Filter | STF-104ZB-TBM | LCフィルターEMI | | | 01 |
| | VV483200 | Rotary Variable Resistor | RK09K12A0 | 二連ロータリーVR | | | 03 |
| | VJ927200 | Transistor | 2SA1162 O,Y | トランジスタ | | | 01 |
| | VD303700 | Transistor | 2SC3326 A,B TE85R | トランジスタ | | | 01 |
| | VB493900 | Diode | MA221 | ダイオード | | | 01 |
| | VS201100 | Diode (chip) | D1F60 | チップダイオード | | | 01 |
| | VV916900 | Holder, Jack | | JKアングル | | | 03 |
| | -- | Connector Assembly | | ADIN束線 | (VV95090) | | |
| | -- | Connector Assembly | 10P | SW3束線 | (VZ02050) | | |
| | -- | Connector Assembly | 5P | SW4束線 | (VZ02100) | | |

‡ New Parts（新規部品）

ランク：Japan only

| REF NO. | PART NO. | DESCRIPTION | | 部品名 | REMARKS | QTY | ランク |
|---|---|---|---|---|---|---|---|
| | -- | Connector Assembly | 4P | RE束線 | (VZ03980) | | |
| | -- | Connector Assembly | | DC束線 | (VZ03990) | | |
| | VA078900 | Jumper Wire | 0.55 | ジャンパー線 | | | |
| | VF891900 | Jack Angle | | JACKアングル | | | 02 |
| JK1 | VE382300 | Phone Jack | YKB21-5010 | ホーンコネクタ | A/D INPUT 1 | | 01 |
| JK2 | VT160000 | Phone Jack | YKB26-5218 | ホーンジャック | PHONES | | 05 |
| JK3 | VC687500 | Phone Jack | YKB21-5014 | ホーンコネクタ（黒） | OUTPUT L/MONO | | 01 |
| JK4 | VC687500 | Phone Jack | YKB21-5014 | ホーンコネクタ（黒） | OUTPUT R | | 01 |
| JK6 | VB312600 | Phone Jack | YKB21-5012 | ホーンコネクタ（黒） | INDIV OUTPUT 1 | | 02 |
| JK7 | VC687500 | Phone Jack | YKB21-5014 | ホーンコネクタ（黒） | INDIV OUTPUT 2 | | 01 |
| VR3 | VU481300 | Encoder | REB161 PVB 15F | 16形エンコーダ | Dial | | 03 |
| | | | | | | | |
| * | VZ025000 | Circuit Board | P-VL | P-VLシート | U,E,W (XT416B0) | | |
| * | VZ024700 | Circuit Board | P-VH | P-VHシート | U,E,W (XT415B0) | | |
| | | | | | | | |
| | VN103500 | Lithium Battery | CR2032 | リチウム電池 | | | 03 |
| | | | | | | | |
| | VS609700 | LCD | DM113Z-5BL3 | 液晶ディスプレイ | | | 19 |
| | | | | | | | |
| | VP691000 | Push Switch | SDDLB1 | プッシュSW | POWER | | 03 |

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